

JOB SATISFACTION AMONG FEMALE NURSES:
AN ANALYSIS OF A THEORY

by

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TABLE OF CONTENTS

ABSTRACT.		iv
 CHAPTER		
I	INTRODUCTION	1
	Rationale.	2
	Definition of Terms.	4
	Purpose of the Study	6
	Organization of the Study.	12
II	REVIEW OF THE LITERATURE	13
	Historical Antecedents	13
	Major Theories of Job Satisfaction	16
	Locus of Control	68
	Job Involvement.	73
	Job Satisfaction in Nurses	74
	Summary of Literature.	78
III	METHODOLOGY.	79
	Hypotheses	84
	Subjects	93
	Instruments.	98
	Data Analysis.	118
	Summary.	122
IV	RESULTS.	124
	JDS Means.	124
	Non-Demographic Data Description	133
	Objectivity of the Core Dimensions	135
	Correlations	139
	Hypotheses	148
	Summary.	171
V	DISCUSSION	174
	Limitations.	190
	Recommendations for Further Study.	191

APPENDICES

A	DEMOGRAPHIC DATA SHEET	193
B	STRESS MEASURE	196
C	AVERSIVENESS SCALE	197
D	SUMMARY OF INSTRUMENTS	199
E	SUMMARY OF METHODS	201
REFERENCES		204
BIOGRAPHICAL SKETCH		213

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Nursing job turnover has been examined from the perspectives of several models of job satisfaction. Implementation of the results of these studies has not reduced turnover significantly. The purpose of this study was to more adequately describe the phenomenon of nursing job satisfaction.

The theoretical foundation of this study was a modified version of the job satisfaction model constructed by Hackman and Oldham. Their basic theory states that workers who are desirous of higher order need satisfaction respond favorably to five core job characteristics which satisfy higher order needs: skill variety, task identity, task significance, autonomy, feedback from the job itself. The consequence is job satisfaction, personal growth, and heightened self-esteem. Those workers who do not desire higher order need satisfaction will not respond positively to the five job characteristics.

This theory was examined to determine whether it included both breadth and depth necessary to be applicable to nursing work and to determine if it was founded on any questionable theoretical assumptions. Several modifications were proposed. Seven relationships were hypothesized: (1) All nurses desire personal growth (higher order need satisfaction), but they differ on whether they pursue it through work or non-work activities (job involvement); (2) Locus of control influences a nurse's experienced responsibility for work outcomes; (3) Stress and task aversiveness decrease experienced meaningfulness of nursing work; (4) Interpersonal relationships are a source of feedback about the outcome of work efforts; (5) Nursing job satisfaction is influenced by satisfaction of lower order needs by the job; (6) A broader additive model predicts job satisfaction in nurses better than Hackman and Oldham's narrow multiplicative model; (7) Variables which predict job satisfaction also predict propensity to leave the job.

Thirty-six white, female, direct care nurses working in a medium-sized general hospital comprised the sample. The subjects ages ranged from 18 to 65 and all ages were equally represented. Seventy-five percent were married. All work shifts and work units were adequately represented. The nurses were stable vocationally but 47% had changed jobs at least once during the previous five years.

The subjects were administered the Job Diagnostic Survey, the Rotter I-E Scale, the Job Involvement Scale, and the Janis-Field Feelings of Inadequacy Scale. Also measured were life satisfaction, work stress, and aversiveness in the work.

Results of this study indicate that all nurses desire satisfaction of higher order needs; they differ on whether these needs are satisfied through work or non-work activities (job involvement). Interpersonal relationships at the work place are a source of personal growth, especially for less job involved nurses.

Interpersonal relationships at work also provide nurses with feedback about the outcomes of their work efforts. This is particularly true of the supervisory relationship. Nurses describe the end products of their work as being ambiguous so feedback is vital to job satisfaction.

Neither stress nor aversiveness affects nurses' experienced meaningfulness of their work. Aversiveness correlated significantly with job satisfaction ($r = -.32$, $p < .05$) and with desire for complex work ($r = -.36$, $p < .05$).

Satisfaction of lower order needs was related to job satisfaction. The most important of these were interpersonal.

There was no evidence that locus of control influenced job satisfaction. Internals experienced significantly greater responsibility for work outcomes than did externals. Moderates, however, behaved like externals.

An expanded model (including information in addition to task characteristics) predicted job satisfaction among nurses better ($R = .80$, $p < .004$) than the task characteristic only model ($R = .22$, $p < .26$). An additive model performed better than a multiplicative model. The results suggest that job satisfaction in nurses is complex and multifaceted.

CHAPTER I INTRODUCTION

Historically, work has assumed a major role in the course of human existence. To primitive persons the tasks of labor evolved because of a prepotent need for survival and as such options relating to work's nature, time, location, and duration were limited. Because of a more complex and technologically sophisticated society, its members found that the satisfaction of vital biological needs is less dependent upon work; consequently, the number of alternatives with respect to the role of work in the individuals' lives has increased and the value of work has become multiply determined. Increasingly, individuals are making decisions about their work by examining the extent to which it satisfies needs which are more complex and abstract than vital needs.

The importance of work satisfaction has been documented by philosophers, scientists, and theologians alike. Kahlil Gibran (1951) reflects upon the importance of his satisfaction to the quality of the products of personal endeavors as he writes:

And if you cannot work with love but only with distaste, it is better that you should leave your work and sit at the gate of the temple and take alms of those who work with joy.

For if you bake bread with indifference, you bake a bitter bread that feeds but half man's hunger.

And if you grudge the crushing of the grapes, your grudge distils a poison in the wine.

And if you sing though as angels, and love not the singing, you muffle man's ears to the voices of the day and the voices of the night. (p. 28)

The importance of satisfying work to the well being of the individual is alluded to by Freud (1962) who proposes that work provides a person with "a secure place in a portion of reality, in the human community" (p. 34). Terkel (1972) addresses self-esteem as a central issue in his conclusions following several years of field study along these lines:

No matter how bewildering the times, no matter how dissembling the official language, those we call ordinary are aware of a sense of personal worth--or lack of it--in the work they do. (p. xxiv)

From primordial to contemporary times the work role has broadened to include not only a means for biological survival but also a potential source of satisfaction of higher order needs. The extent to which work accomplishes the latter has become an important criterion for making decisions about one's work life.

Concurrent with this shift has been a heightened awareness of the necessity to understand the complex relationship between the nature of work and its effect on the individual. According to Locke (1976), as of 1976 at least 3,350 articles and dissertations on the variables which influence an individual's satisfaction with work had been written. The impetus for these studies was the recognition that work dissatisfaction embraces widespread ramifications which include organizations and those who are influenced by workers' efforts. The hope has been that as the nature and dynamics of these conditions become established remedial and preventive interventions for dysfunctional person-work relationships may be developed.

Rationale

When work is not satisfying one option which is frequently chosen by an individual is to change jobs or in some cases vocations. The

nursing profession has been particularly plagued with personnel losses. Estimates of job turnover in this profession range from 35 to 60 percent annually (McCloskey, 1974; Tirney & Wright, 1973). The financial cost of this attrition in the United States alone is staggering: estimated costs for replacing one nurse range from \$300 to \$2,000, depending upon the type of position to be filled and the geographical location (Strilaeff, 1978; Tirney & Wright, 1973; Tuchi & Carr, 1971); Strilaeff reports that in Canada the replacement cost approaches twenty million dollars.

These fail to account for intangible costs such as low productivity of new staff, disruption of established work routines, staff time devoted to new worker orientation, the psychological loss created by a staff persons' departure, or the psycho-social impact of a change on a staff person and their families. Some of these variables are difficult, even impossible to measure from a financial perspective but their powerful impact can be intuited. In truth, the overall results of attrition in this profession are overwhelming.

Seybolt, Pavett, and Walker (1978) categorize turnover in nurses as involuntary and voluntary. Involuntary turnover is due to factors external to the worker-work relationship, such as the spouse being transferred, or illness; voluntary turnover reflects a nurse's decision to terminate in the absence of extrinsic mitigating factors. Research reveals that as much as 75 percent of the turnover among nurses involved with direct patient care is voluntary; it is this problem with which this investigation is concerned.

Considering natural human variability one can assume that some nurses would leave direct patient care positions because of a

proclivity toward other areas such as administration, teaching, or research. It is also assumed that a number of nurses, especially younger ones would change jobs frequently. Such behavior demonstrates the inherent mobility characteristic of today's living style. These observations, however, do not account for the inordinate level of nurse turnover. Understandably, a portion of this attrition is due to dissatisfaction with the job itself.

Recognition of the problem is not recent and a variety of proposals have been presented to develop both remedial and preventive interventions. Based on the current rate of turnover not only a solution has yet to be found but further investigation of this phenomenon is warranted.

Definition of Terms

For the purposes of this investigation the following definitions are given:

Job satisfaction. Although job satisfaction has been defined by many researchers the essential elements of the definitions include a positive affective response to the appraisal of one's job or job experiences (Locke, 1976). Job satisfaction is distinguished from morale which Viteles (1953, p. 284) defined as ". . . an attitude of satisfaction with, desire to continue in, and willingness to strive for the goals of a particular group or organization." Morale is future oriented while job satisfaction is oriented on current and past appraisals of a job situation. Too, morale indicates a group referent while job satisfaction is typically based on a personal assessment of job predicaments. Satisfaction must also be differentiated from job involvement which will be defined later.

For this investigation job satisfaction is operationally defined by the subjects' responses to the Job Diagnostic Survey (Hackman & Oldham, 1975). This instrument provides scores for two aspects of this phenomenon: general satisfaction with the job and specific satisfaction with five separate dimensions of the job situation. (See Chapters II and III for a more extensive presentation of this topic.)

General life satisfaction. General life satisfaction indicates a positive affective response from individuals to their global life situations. General life satisfaction will be operationally defined by a subject's response to a single three alternative global item previously used successfully by researchers to assess this phenomenon (Robinson, 1977).

Satisfaction with self. Satisfaction with self indicates a liking and respect for oneself which has some realistic basis. This term will be operationally defined as a subject's score on the Janis-Field Feelings of Inadequacy Scale (Eagly, 1967).

Job involvement. Job involvement reflects the degree to which an individual's level of positive self-esteem is determined by the type and amount of work performed; the core of their self image is greatly influenced by their work and most of their living is done on the job rather than away from it (Lodahl & Kejner, 1965). Job involvement stems from the internalization of a value orientation toward work during the early socialization process; it is a stable characteristic of a person, irrespective of the work performed (Lodahl, 1964). Job involvement includes a value system which determines a response to work in general rather than a response to a specific job. Job involvement is operationally defined as a subject's score on a job

involvement assessment scale which was developed by Lodahl and Kejner (1965).

Locus of control. Locus of control describes the degree to which a person believes that reward follows from or is contingent upon behavior or personal attributes, i.e. that there is a causal relationship between behavior and subsequent reward. If a person believes that a reinforcement which follows behavior is not entirely contingent upon the behavior but is under the influence of luck, fate, powerful others, or that the causal relationship is inconsistent because of the complexity of the forces within the environment, then that person is said to exhibit a belief in an external locus of control. On the other hand, if one believes that a reward is consistently contingent upon one's behavior or relatively stable personal attributes, then that person is said to believe in an internal locus of control. The extent to which one attributes causality to an internal source vs. an external source is not an all or none trait but may vary along a continuum. Locus of control is operationally defined by the subject's score on the Rotter I-E scale (Rotter, 1966).

Purpose of the Study

Modern interest in job satisfaction and in optimum performance at work was initiated at the turn of the century with the introduction of mechanization and assembly line work. Significant negative consequences followed this radical shift in production methods for both workers and organizations in which they were employed; thus, a need for an investigation of this problematic issue quickly became apparent.

Historically, exploration of the phenomenon of job satisfaction has occurred in three stages: Initially, investigators focused

attention on the nature of work characteristics and physical work environment. In the early 1930's attention shifted to the workers themselves and interpersonal relationships and this trend has continued. Most recent in its development is the exploration of the work vis-a-vis its propensity to facilitate personal growth.

The nursing profession has been a target for research during each of these stages but there has been little evidence of change following the application of the studies' results. A plausible explanation is that there has been a failure to provide a complete description of the phenomenon of job satisfaction among nurses which would allow development of effective interventions. This has been the case regardless of the historical foundations upon which the investigations were based. In an attempt to understand job satisfaction vis-a-vis a personal growth model, Hackman and Oldham (1975) presented a theory of job satisfaction which led to the development of the Job Diagnostic Survey. The purpose of this study is to explore the work of nursing, using this theory as a foundation, so that a more complete explication of the phenomenon of job satisfaction in nurses might be developed.

In brief, Hackman and Oldham's theory assumes that five characteristics of a task are responsible for producing job satisfaction; this relationship is influenced by workers' desire for higher order need satisfaction. The task characteristics (core job dimensions) are assumed to be objective and measurable. They are defined below (Oldham, Hackman, & Stepina, 1978, pp. 5-6):

1. Skill variety is the degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the employee.

2. Task identity is the degree to which the job requires completion of a "whole" and identifiable piece of work--i.e., doing a job from beginning to end with a visible outcome.
3. Task significance is the degree to which the job has a substantial impact on the lives or work of other people--whether in the immediate organization or in the external environment.
4. Autonomy is the degree to which the job provides substantial freedom, independence, and discretion of the employee in scheduling the work and in determining the procedures to be used in carrying it out.

5. Feedback from the job itself is the degree to which carrying out the work activities by the job results in the employee obtaining direct and clear information about the effectiveness of his or her performance.

Hackman and Oldham (1975) contend that jobs which are designed to include high levels of these core dimensions have the propensity to facilitate a worker's personal growth and thus produce a positive affective response in workers to their work, i.e. job satisfaction. This relationship is qualified, however, by the suggestion that only those desirous of personal growth (i.e. desiring to have higher order needs satisfied) will respond favorably to jobs high on the core dimensions. Such individuals are said to be high on growth need strength, an individual difference variable also measured by the Job Diagnostic Survey. The implication is that not all persons are desirous of personal growth. (This synopsis of Hackman and Oldham's theory is supplemented by a more extensive presentation in Chapter II.)

Since its inception, the Job Diagnostic Survey and its underlying theory have been used fairly successfully to diagnose a multitude of jobs: 1) in describing the relationships among the core dimensions

of the jobs, and 2) workers' job satisfaction as moderated by workers' growth need strength. The authors admit, however, that the explanation of the relationship is still incomplete. This writer contends that four factors should be considered which might add to the current level in understanding the core dimension-job satisfaction relationship. First, to repeat, Hackman and Oldham assume that all persons do not desire personal growth, as measured by growth need strength; that this difference is the primary moderating influence upon the relationship. This writer suggests that this assumption is false, that two additional individual difference variables, job involvement and locus of control, must be considered as possible moderators upon the job characteristic-job satisfaction relationship in order to adequately define the relationship.

Second, Hackman and Oldham fail to consider the possible influence of other job-related variables that are either extrinsic or intrinsic to the task and might influence satisfaction with the task. For example, a job might be high on all of the core dimensions and the worker might show high growth need strength yet it is conceivable that a job might have aversive characteristics which could prevent the worker from being satisfied with the job. This author suggests that there are both environmental factors and task characteristics unique in nursing which might be influential in the development of job satisfaction.

Third, the authors claim that they measure the worker's general level of satisfaction with work; yet they do not clearly define the relationship between lower order need satisfactions and general job satisfaction even though such factors are measured by the Job

Diagnostic Survey. This author suggests that the consideration of variables such as satisfaction with pay and supervision will provide additional information about the phenomenon of job satisfaction among nurses.

Finally, Hackman and Oldham propose a multiplicative, disjunctive mathematical model for the prediction of job satisfaction based on knowledge of job core dimensions. This model assumes that all of the core dimensions and growth need strength must be present in high quantities in order for job satisfaction to develop. This author suggests that this model is inadequate: first, because it fails to provide for the possibility that individual differences will result in workers responding positively to some core characteristics more than others or to work characteristics not considered by the theory; second, because the use of a multiplicative mathematical model necessitates multiplying the scores of some of the Job Diagnostic Survey scales together which compounds their statistical error and masks important relationships.

In summary, this study will begin by defining the characteristics of the work of direct patient care nursing in terms of core dimensions as specified by the Hackman and Oldham theory of job satisfaction. This information will then be used as a foundation for explaining the process of job satisfaction among nurses by examining it in terms of the model proposed by Hackman and Oldham. While their model has been adequate in its description of the dynamics of job satisfaction, it has four limitations which this writer suggests make the description incomplete. Thus, this study will offer a more complete description of job satisfaction among nurses by considering

additional information which might add to the theory's description of job satisfaction.

Clarification of the dynamics of job dissatisfaction among nurses will provide guidelines for establishing effective interventions against it. The actions might be remedial or preventive in nature and could assume such forms as work re-design, pre-education counseling, or pre-employment placement advisement. If consideration of additional influences on job satisfaction among nurses provides a more complete description of the phenomenon than the Hackman and Oldham model alone researchers might be encouraged to explore the use of the expanded model with other vocational groups.

This fundamental descriptive research will provide the opportunity to investigate the following research questions:

1. Will information relative to nurses' beliefs about locus of control be useful in better predicting satisfaction with work?
2. Will information about nurses' job involvement be useful in better predicting satisfaction with work?
3. Will information about the characteristics of nurses' work which were not considered by Hackman and Oldham be useful in better predicting satisfaction with work?
4. Will information about the degree to which a job satisfies the nurses' lower order needs be useful in better predicting satisfaction with work?
5. The model which Hackman and Oldham present predicts job satisfaction based on knowledge of core job dimensions and worker's growth need strength; it specifies that each core job dimension as well as growth need strength must be present in high quantities in

order for the worker to experience job satisfaction. Might a simpler additive non-disjunctive model (which includes the Hackman and Olham predictors as well as those entities shown by this study to be of possible influence on job satisfaction development) better predict job satisfaction among nurses?

6. Will information which predicts nurses' job satisfaction also predict a propensity to leave their jobs?

Organization of the Study

The remainder of this study is organized into four chapters and the appendices. Chapter II presents an overview of the development of and research in the field of job satisfaction with special emphasis on the theoretical foundations of Hackman and Oldham's Job Diagnostic Survey. The possible relationships of job satisfaction to locus of control, self esteem, and job involvement will be considered. A review of the literature on job satisfaction in nurses will conclude this section. Chapter III covers the methods and procedures of the study, hypotheses, design, and descriptions of the assessment instruments. The results are presented in Chapter IV. Chapter V provides an overview of the conclusions of the study and allows the researcher to suggest the implications of the results.

CHAPTER II REVIEW OF THE LITERATURE

This review covers four areas. The initial section presents an overview of the historical development of research in the area of job satisfaction as well as brief summaries of each of the major theories in this field. This is followed by an in-depth explication of the development and principles of Hackman and Oldham's theory of job satisfaction including a presentation of their assessment instrument, the Job Diagnostic Survey. Next, individual difference variables expectancy of locus of control and job involvement will be reviewed and their relationships to Hackman and Oldham's theory will be suggested. Finally, an overview of the current research on job satisfaction in nurses will be provided.

Historical Antecedents

The study of job satisfaction per se did not begin until the 1930's although its roots are found much earlier in history. At the turn of the century the predominant influence on industrial practices was the principle of scientific management. This school of thought held that workers who received the greatest possible compensation with the least possible fatigue would be the most satisfied and productive.

The pre-1930's research in job satisfaction comprised the first of three historical trends. It investigated workers' attitudes and productivity vis-a-vis scientific management and focused on the influence of the physical condition of work on the worker; individual differences were usually ignored (Taylor, 1970).

The problem of fatigue reduction commanded a good deal of interest and continued to be studied during World War I and into the 1930's. In Britain, the Industrial Health and Fatigue Research Boards studied the effects of hours of work and rest on fatigue and performance (Vernon, 1921); other investigation focused on the effects of environmental conditions such as lighting and ventilation (Burt, 1931; Viteles, 1932). Concurrently, a related phenomenon, boredom, was being investigated; some researchers considered the influence of a more varied set of factors, e.g. intelligence, rest pauses, work batch size, work variety, and social relationships. However, the inclusion of variables other than those which were environmental was not extensively used at this time and did not receive continuing support (Locke, 1976).

A shift in investigative trends was marked by a series of studies which were conducted to explore the effects of rest pauses and incentives on productivity, a thesis in line with previous research on scientific management. The now famous Hawthorne studies of the early 1930's, conducted by Mayo (1960; 1970), provided some unexpected results. The workers did not respond in a purely mechanistic fashion to the interventions made and the authors concluded that the workers' attitude, i.e. their subjective appraisals of the work situation, influenced their reactions to the job, a relationship suggested by Taylor a decade before. The Hawthorne studies began the human relations trend in the study of job satisfaction, a movement which has persisted in various forms into the present. The central tenet of this orientation is that relationships among the workers, their supervisors, and their work group are of

primary importance in determining their satisfaction with their work. Homans (1950), Whyte (1955), Fleishman and Harris (1962), Likert (1961), Marrow, Bowers, and Seashore (1967) are among the primary investigators in the human relations model.

The human relations approach reached its zenith in the late 1950's and early 1960's. With the publication of the work of Herzberg, Mausner, and Snyderman in 1959 came the beginning of the third trend in the investigation of job satisfaction. It was at this time the researchers returned to the investigation of the work itself as a primary cause of job satisfaction. Unlike the earlier work of the Industrial Health Research Boards which focused almost exclusively on the horizontal enlargement of work (e.g. variety) to increase worker satisfaction, this trend included the investigation of the effects of vertical enlargement of the work (e.g. providing the opportunity for personal growth through the job). These efforts which have created much interest in the past two decades (Ford, 1969; Hackman & Lawler, 1971; Maher, 1971) are called the job enrichment approach.

In summary, there have been three developmental trends in the study of job satisfaction. The first placed a heavy emphasis on the work environment, the horizontal nature of the work, and the remuneration received. The second approach, the human relations school, was initiated during the early 1930's and focused on the interpersonal relationships in the work setting. Finally, attention has turned back to the importance of the characteristics of the work itself but with particular interest being given to the work traits which afford the opportunity for the employee's personal growth. To some extent,

each of these trends is apparent in the research today although the latter is ascendant. From these three trends, four major theories of job satisfaction have arisen; these trends will be briefly reviewed. They include the Herzberg's Motivator-Hygiene theory, the Activation Theory, the Socio-Technical Systems theory, and Hackman's theory of Job Enrichment.

Major Theories of Job Satisfaction

Motivator-Hygiene Theory

The Motivator-Hygiene (or Two-Factor) theory of job satisfaction arose from the findings of an investigation in which engineers and accountants were asked to describe occasions when they were particularly satisfied and dissatisfied with their jobs (Herzberg, Mausner, and Snyderman, 1959). Incidents mentioned in their accounts were grouped according to apparent common characteristics; the frequency with which each category was mentioned was then determined.

Two major groups of incidents emerged, the first involved the work itself and included such items as achievement, promotions, and responsibility. These factors were cited frequently as being sources of satisfaction but infrequently as sources of dissatisfaction. This category was named the Motivators.

The variables in the second major grouping were most often identified as sources of dissatisfaction and infrequently mentioned as causes for satisfaction. These Hygienes were incidents that were concerned with the context in which the work was performed; they included variables such as supervision, interpersonal relations, pay, and company policy.

According to the Two-Factor theory, job satisfaction and dissatisfaction result from separate and independent causes. Satisfaction depends upon the presence of Motivators while dissatisfaction comes from the absence or inadequacy of the Hygienes. The absence of Motivators will not produce dissatisfaction if the Hygienes are present; satisfaction will not occur in the absence of Motivators, irrespective of the quality or quantity of the Hygienes present.

Herzberg (1966) later tied his theory of job satisfaction to a theory of the nature of the person. The central theme of his theory is that humans possess two independent sets of needs: physical and psychological. The physical needs operate on a tension reduction basis, i.e. when unfulfilled needs occur the organism is motivated to reduce the tension experienced. No pleasure is derived from the ensuing behavior, only pain avoidance.

The psychological needs are equated with the needs for growth, i.e. to use one's mind in a productive fashion. These needs only propel the organism in a positive direction, i.e. attainment of the behavior's goal yields pleasure; failure to satisfy these needs does not produce displeasure.

Herzberg draws a parallel between this dualistic need system and the two factors of job satisfaction. Hygienes serve to fulfill or frustrate physical needs; Motivators satiate or frustrate psychological needs. Therefore, the reduction of psychological needs via the Motivators in the work situation will produce pleasure (job satisfaction); yet the failure to satisfy these growth needs will not produce dissatisfaction unless the job's Hygiene factors are insufficient. The Hygienes, on the other hand, are necessary for the

fulfillment of physical needs vis-a-vis work; without them tension is not reduced and displeasure (job dissatisfaction) results. Reduction of this tension does not produce pleasure (job satisfaction), merely the avoidance of displeasure (job dissatisfaction).

There are several logical criticisms of Herzberg's work which must be mentioned. The first is his reliance on a dichotomous view of mind and body when these systems are not independent. For example, in humans the mind is necessary in order for the many physical needs to be satisfied and, in extreme instances, even for physical survival.

A second criticism of Herzberg's view of humans and job satisfaction concerns his conceptualization of the operation of needs. First, the hydraulic tension-reduction model of motivation is no longer considered accurate. Also, his description of the mode of operation as being unidirectional is inconsistent with observed phenomena. For example, as a rule a neurotic's dissatisfaction is due to a failure to grow rather than to frustrated physical needs. Also, in the process of fulfilling physical needs, satisfaction of psychological needs may occur, e.g. eating may be pleasurable due to the taste of the food. In the first instance, dissatisfaction occurs from the frustration of a psychological need (absence of a Motivator) and in the latter case satisfaction occurs with the fulfillment of a physical need (presence of a Hygiene). Thus, the Two-Factor theory is logically contradicted.

A third criticism of Herzberg's theory is that in organizational practice the two systems are not independent. For example, managerial decisions or relationships with supervisors (Hygienes) may influence promotion or achievement (Motivators). Herzberg fails to account for the lack of independence between the systems.

Finally, Herzberg fails to consider the impact of individual differences in the relationships among Motivators, Hygienes, and the workers' affective responses to work. Some investigators have found that all workers do not value jobs that allow or promote psychological growth (Hulin, 1971; Hulin & Blood, 1968). If this is the case, how does one explain the satisfaction that such workers might derive from work? It may be that their values conflict with their needs or that Herzberg's theory is not as generalizable as he supposed (Locke, 1969). The answer to this question is unclear and requires further investigation.

Evaluating the empirical evidence concerning Herzberg's theory is difficult because he has been inconsistent in the presentation of his reasoning. King (1970) describes five versions of the Two-Factor theory so the available research must be similarly grouped. This presentation will only consider examples of the research pertaining to King's Theory V which states that satisfaction is determined predominantly by Motivators and dissatisfaction predominantly by Hygienes.

The validity of this theory is cast into doubt by the finding that only Herzberg's methodology consistently replicates his findings. Locke and Schneider (1971), in consideration of the logical lack of independence between the Motivators and Hygienes, used an agent/event system to classify incidents described by their subjects as causing satisfaction or dissatisfaction. They found that the same class of events was responsible for both satisfaction and dissatisfaction and that these incidents were primarily task related Motivator types such as success, promotion, and responsibility.

Along the same line, the hypothesis that defensive bias would play a role in the attribution of responsibility for satisfaction and dissatisfaction has been tested (Locke, 1973; Locke & Schneider, 1971; Wall, 1973). The most direct evidence was provided by Wall who asked 77 employees of a chemical company to describe sources of satisfaction and dissatisfaction for each of three different time periods. A measure of ego defensiveness was administered and a significant correlation was found between defensiveness and the proportion of dissatisfiers mentioned which were Hygienes. As most of Herzberg's Hygienes are agents rather than events, the study concluded that the self was typically given credit for success (satisfaction) and others were typically blamed for failure (dissatisfaction). Thus Herzberg's dual system was a function of ego protective maneuvers rather than an accurate description of the work situation.

In summary, Herzberg's Two-Factor theory of job satisfaction has had a major impact heuristically. His theory has also demonstrated some work, personal growth, and job satisfaction relationships. This latter concept is a cornerstone for the job enrichment approach to job satisfaction which is described later. Two major criticisms of Herzberg's work revolve around his dualistic conceptualization of physical and psychological needs and his thesis on the undirectional influence of these needs on satisfaction and dissatisfaction. These tenets have been challenged empirically with the typical findings suggesting that the two systems are related, that attribution of responsibility for satisfaction may be influenced by defensiveness.

Activation Theory

The activation theory of job satisfaction which had its origin in the early 1900's research on scientific management has no single

proponent. To begin with, this research focused on the effects of fatigue on job performance and satisfaction of workers. A result of the emerging age of automation and mechanization was the creation of many specialized, routine, repetitive, and simplified tasks; an outgrowth of these changes was the investigation of the effects of boredom on performance and satisfaction. Activation theorists continued with the investigation of the degree of horizontal enlargement of a job, then expanded it by including evidence of a neurophysiological substrate for the observed behavioral patterns. Currently, activation theory is intimately tied to psychoneurological concepts such as the influence of the reticular formation on general organismic arousal and affective response. Its propositions offer explanation and some predictive evidence for the effects of repetitive tasks as well as for the impact of factors such as music, feedback, and noise on performance, satisfaction, and proclivity for accidents. This section will briefly describe the historical foundation for activation theory and present neuropsychological evidence for its validity. It will conclude with a discussion of the significance of activation theory in relation to task performance.

With the advent of the industrial revolution came the process of automation and work specialization. The factory workers, unlike the craftsmen, were now responsible for only a small portion of the process of creating the final product. Thus they found they might repeat this simplified task many times during a day's work. The problem of sustaining performance levels in work areas which had been simplified by specialization became well known.

In an early investigation of the effects of this sub-specialization, Vernon (1921) describes the increase in boredom and decrease in satisfaction among workers whose jobs were characterized by a very short cycle of repeating task behaviors. These effects were also found by later investigators among assembly line workers (Strauss & Sayles, 1960; Walker & Guest, 1952). Vernon attributed these observations to a decrease in the amount of task variety offered by the segmented job as compared to the opportunity to construct the entire article.

An alternative explanation suggested that the repeated performance of the task resulted in increased levels of worker fatigue. This thesis was inconsistent with two lines of empirical findings, however. Several researchers noted that a decrement in performance level was not associated with the typical physiological indices of fatigue (Ghiselli & Brown, 1955; Tiffin & McCormick, 1965) and Broadbent (1958), following the findings of early learning theorists (Ammons, 1947; Hull, 1943; Pavlov, 1927), concluded that the decreased performance level was a function of the number of times the stimulus task was presented rather than the frequency with which the task response was actually performed. Further evidence concluded that increasing the complexity of the task response or the task stimulus temporarily alleviated or postponed motivational drift; this finding was consistent with Vernon's contention. It was concluded that routinization led to dissatisfaction.

Modern activation theory has developed from the neuropsychological investigation of the reticular formation. This structure extends from the lower brain stem through the pons and midbrain into

the hypothalamus and thalamus. The reticular formation's cortical projection system is diffuse and nonspecific; it itself receives collateral projections from the ascending sensory tracks as well as from the cortex. Consequently, the effect of reticular formation activity is generalized while specific information about the stimulus, such as location, is typically lost. The structure itself may be subdivided into the brainstem reticular formation (BSRF) and the thalamic reticular formation (TRF) with the former having the greater interest for activation theorists.

The BSRF has the effect of increasing the general arousal of the organism in response to the stimulation of an extero- or interoceptor. Further, the nature of the BSRF's response may be moderated by cortical activity and vice versa. Additional evidence (Scott, 1966), suggests that the BSRF may be involved in habituation to a stimulus; deactivating the structure with Nembutal will stop the habituation process while recovery from the drug leads to recovery of the habituation. The nature of BSRF activity is summarized by Scott as follows: stimulation from exteroceptive, interoceptive, or cortical sources sets up recurrent discharges in the BSRF which (a) outlast the stimulus in their effect, (b) diminish with repeated stimulus presentation, and (c) recover following cessation of the stimulus presentation. This activity has the effect of increasing general organismic arousal and shows a reciprocally influential relationship with cognitive processes such as perception.

Further effects of BSRF activity are suggested by Olds and Milner (1954) and Young (1961) who provide evidence that an organism's affective response is also mediated by neural mechanisms, that these

structures are separate from but not independent of the BSRF. Hence, an interrelationship among activation, affect, and behavior is suggested.

With the aforementioned historical and neuropsychological foundation in mind, the tenets of activation theory may now be presented. In general, the degree of activation of any organism is a major factor in a wide range of behavioral processes; the level of organismic activation is a function of the degree of excitation of the BSRF (Fiske & Maddi, 1961; Malmo, 1959). There are several characteristics of stimuli which affect BSRF stimulation: the intensity, novelty, speed of presentation, mode of introduction, and uncertainty of introduction (Scott, 1966). Others, such as the complexity and meaningfulness of the stimulus, are influenced by perceptual factors within the organism. As pointed out above, perceptual processes are influenced by cortical activity which influences and is influenced by the BSRF.

The relationship between arousal and performance is described by the well-known inverted U curve. Both low and high levels of activation result in decreased performance levels while maximum output occurs at some intermediate value of arousal.

The relationship between affect and arousal which has been described by Fiske and Maddi (1961) is similar. Each organism demonstrates a mean or typical level of activation which results in a pleasant, affective response by the organism. As the activation level deviates from the mean in either direction, the affective response becomes less pleasant; eventually, it becomes unpleasant for the organism. This state of displeasure motivates the being to engage in

behaviors designed to shift the arousal level back toward the mean value.

The principles of activation theory have been applied to the problems facing workers in their jobs. Several predictions are made concerning behavior if the task presents the four attributes of constant repetition, a limited range of responses, simplicity in the task stimulus configuration, and temporal regularity. In this situation, increased familiarity with the task and the environment will lead to habituation in the BSRF and decreased arousal. The workers will engage in behaviors designed to eliminate the ensuing negative affect; these behaviors typically interfere with the performance of the task, hence the performance decrement. Examples of these behaviors which might increase the activation level are day-dreaming, increasing proprioceptive stimulation by stretching, moving to another environment, or engaging in social activity. Each of these behaviors is extrinsic to the task and probably would result in a performance decrement. On the other hand, workers might elect to enlarge the job horizontally (increase the variety in the task); for example, the task might be subdivided into discrete units in order to increase the frequency of feedback about performance, or the order in which subsets of the task are performed might be varied. The result is a temporary increase in the complexity or variety of the job and an increase in the level of activation without a decrement in performance. If the task characteristics are in the extreme opposite direction, one might expect the workers to engage in arousal reducing maneuvers.

If the job has the flexibility to allow the workers to engage in these behaviors, the overall effect is an increase in the quality of the work, satisfaction with the work and sometimes quantity of the work (Davis, 1957). If not, a predictable set of responses occur: increased task completion time, product variability, irritability, restlessness, errors, daydreaming, accidents, and turnover (Scott, 1966).

Several means of designing jobs to protect against these phenomena have been proposed. Known collectively as horizontal job enlargement, they include introducing rest pauses, providing more opportunities for knowledge of the results of one's efforts (Mackworth, 1950), adding music to the background (Uhbrock, 1961), and increasing the variety inherent in the task.

In summary, the activation theory of job satisfaction has demonstrated that the stimulus value of a task has an empirically supported effect on performance and satisfaction with the task. Interventions for unsatisfactory situations have been proposed and successfully tested.

There are several major criticisms of the activation theory as a sufficient perspective for coping with job dissatisfaction. The first is its narrow range of focus, i.e. it does not consider influences on performance other than the task characteristics with respect to arousal potential. This restricts its applicability to most jobs in part only. Also, several other factors, e.g. social relationships and individual differences, have a demonstrated effect on the workers which are tangentially considered only.

The second criticism involves measurement. Stimulus characteristics may be defined and adequately quantified (Berlyne, 1966). However, defining a job in terms of its stimulus value is feasible only on a general level; thus the theory loses some of its strength in the practical situation. Also, no convenient (or humane) method currently exists either for measuring the activation level of individuals working in the actual job situation or for determining the optimum level of activation for each individual.

Finally, the process by which activation levels change with changing stimuli is not understood. According to activation theory the procedure of job rotation should provide a permanent solution for job dissatisfaction as individuals are provided with a varying set of stimuli each time the arousal level deviates from the optimal level. This has not been established empirically and observation provides contradictory evidence (Hackman & Oldham, 1974).

Socio-Technical Theory

The socio-technical systems theory of job design focuses on the interaction between the technological characteristics of the job and the social system of the work situation. This relationship is said to have an influence on worker performance and satisfaction. The impetus for the development of this approach is similar to that of the activation theory, although the two diverge from that point. In the 1940's a movement was undertaken to mechanize the process of coal mining. This resulted in the dissolution of the small self regulatory mining teams within which each individual was responsible for completion of the entire series of mining tasks. These teams were replaced by 40-50 individuals, each working on a single task at

their own rate. While each miner worked independently, completion of the work was dependent upon the work performance of all. The groups of miners working on a similar task tended to optimize the working conditions for themselves but often at the expense of those working on subsequent tasks. This resulted in low cooperation, scapegoating, increased absenteeism, and decreased performance. Morris (1947) and Halliday (1948) conducted psychiatric investigations of the effects of this mechanization process and discovered that the incidence of psychosomatic disorders among the miners had reached epidemic proportions. Clearly a problem was at hand.

The socio-technical theory of job design dates its beginning with the publication of an article by Bamforth (Herbst, 1974). It presented the results of the social and psychological consequences of the mechanization of coal mining. The conclusions reached by Bamforth concerning the causes of the difficulties which had been described by Morris (1947) and Halliday (1948) represent the tenets of socio-technical theory. First, the design of the technological system of the work process defines and limits the nature of the social system among the workers by specifying the nature of the work roles and the interdependent relationships among them. Second, work performance and socio-psychological issues are influenced by the joint operation of the two systems. If the technological system is emphasized over the social system (a goal of management), initial productivity will be high but worker dissatisfaction will ensue with a consequent decrement in performance quality and quantity. If the social system is of primary concern, production inefficiency will be high in spite of worker satisfaction. The third major thesis of this

approach is that a dysfunction in the social system which results in adverse socio-psychological events for the workers cannot be resolved through intervention in the social system. The change must occur in the technological system because it defines and delimits the social system. The final point is that the goal should be the optimization of both systems.

A serendipitous series of events one year later led to a revision of this scheme. Some of the workers began to spontaneously develop autonomous work groups which were highly cohesive and worked cooperatively within and between shifts. Many of the adverse consequences of the new mining procedure diminished in effect and a general movement to redesign the social system without interfering with the technological system began to develop. This was especially evident with respect to the study of autonomous work groups (Herbst, 1962) and alternatives to traditional power hierarchies (Herbst, 1976) within the work organization. Consequently, socio-technical theory was revised to suggest that the technical system offered a limited choice of possible social systems which might evolve, rather than just one system and that these social systems might vary in their effects.

This rationale continued until 1966 when the first attempt to design an entire socio-technological work unit was conducted (Herbst, 1974). The current focus of this theory is on the design of the work unit to maximize both the efficiency and productivity of the technological system and the flexibility and autonomous decision making capability inherent in the social system.

This approach to job performance and satisfaction has provided a useful but general way of looking at the interaction between the

characteristics of a job and the social milieu in which it occurs. However, there are three major criticisms which diminish its usefulness. First, the dynamics of the interaction between the systems are poorly delineated and the theory is therefore very difficult to test. Second, little direction is offered for carrying out the redesign of problematic jobs except for generally attending to both of the component systems. Finally, no means are provided for diagnosing a job or measuring the effects of job redesign.

Job Characteristics and Individual Differences

As with the three aforementioned theories, the task characteristics/individual differences model of job satisfaction has its developmental roots in the early attempts to thwart adverse effects of job specialization. The specific method of job redesign espoused by this approach is termed job enlargement or job enrichment. It involves not only increasing the variety and complexity of the job (horizontal enlargement) but also expanding the opportunities available to the worker for autonomous decision making (vertical enlargement). The most recently developed version of this theory (Hackman & Oldham, 1974, 1975; Oldham et al., 1978) proposes that the vertical and horizontal dimensions of a job influence the satisfaction which workers derive from the work and the quality of performance demonstrated. Further, this relationship is moderated by an individual difference variable, growth need strength, i.e. the extent to which the workers are desirous of satisfying higher order needs. The proponents of this model concurrently developed the theory and a means of measuring the variables specified by the theory to be important in job redesign. This section explores the simultaneous development of

Hackman and Oldham's job satisfaction model and their assessment instrument, the Job Diagnostic Survey. Logical criticisms of the theory and its current status vis-a-vis the available empirical evidence are presented.

Historical antecedents. The early approach to research on job enlargement was characterized by numerous case studies in which jobs were redesigned and measures of employee satisfaction and performance were taken. While the jobs were typically enlarged so that they became more meaningful and challenging to the workers, the investigations usually lacked both methodological rigor and a conceptual framework through which the results might have been systematized and critically evaluated (Hulin & Blood, 1968). One exception to these weak studies was the work of Turner and Lawrence (1965) whose findings provided part of the foundation for Hackman and Oldham's theoretical model.

In an effort to measure job characteristics Lawrence and Turner reviewed the literature on job satisfaction and absenteeism and extracted six requisite task attributes (RTA) expected to be correlated positively with job satisfaction and attendance. Operational definitions for each RTA were formulated and 47 jobs were measured on these characteristics by observation and interview. The results indicated that the six RTA (variety, autonomy, required interaction, optional interaction, knowledge and skill required, and responsibility) were highly related to one another so the researchers developed a linear combination (RTA Index) of the six task characteristics which summarized their scores. This composite score was used to examine the relationship between RTA, job satisfaction and absenteeism.

The expectation that workers in jobs high on RTA would report higher satisfaction and attendance than would those workers in low RTA jobs was not met consistently. Instead, only workers in rural areas showed this relationship; urban employees exhibited an inverse relationship between RTA and job satisfaction and no relationship between absenteeism and work attributes. The authors concluded that subcultural differences in values moderated the relationship.

Evidence supporting this conclusion was offered by Blood and Hulin (1967) and Hulin and Blood (1968) who had hypothesized that endorsement of traditional work values, e.g. the Protestant Work Ethic, moderated the relationship between RTA and job satisfaction. Because rural workers are more likely to hold to these values than are urban workers the differences between the two groups in the Turner and Lawrence study were explicated. These conclusions called into questions the idea that generalized job redesign would improve worker satisfaction or performance and hinted at the possible moderating effects of individual difference, at least on a subcultural level.

An initial investigation. Hackman and Lawler carried this line of reasoning one step further and suggested that individual differences within subcultural groups may also influence the relationship between job characteristics and the workers' satisfaction, performance, and attendance. To explore this proposition, they drew upon expectancy theory (Lewin, 1938; Tolman, 1959) vis-a-vis work situations (Vroom, 1964; Porter & Lawler, 1968) to establish their theoretical foundation. Then they presented five major suppositions basic to their research which are presented below.

1. If one believes that by engaging in a certain behavior one will obtain some valued outcome, the probability of ones emitting that behavior is increased. The valued outcome may be extrinsic (e.g. pay, goods, etc.) or intrinsic (e.g. self-satisfaction) and is a motivator for the exhibition of the specified behavior.

2. An outcome will be valued to the extent that it either satisfies or is expected to satisfy a psychological or physical need, or to the extent that it has instrumental value, i.e. may be used to obtain other valued outcomes.

3. If the working conditions are such that the employees satisfy their own needs by working toward organizational goals then the workers will diligently strive for those goals (McGregor, 1960).

4. The concepts of Maslow's (1943; 1954) need hierarchy are applicable as most lower order needs (physical and safety) are usually well satisfied in our culture; they also tend to diminish as they are satiated. Higher order needs (e.g. personal growth) on the other hand do not diminish in strength as they are met. In fact, satisfaction of these needs may actually increase their strength. This suggests that satisfaction of the higher order needs of the workers through their work may lead to an ongoing and escalating motivational process quite unlike that induced by satiating lower order needs (Alderfer, 1967, 1969). A caveat is proffered, however: not all employees are motivated by higher order needs, i.e. individual differences must be considered.

5. The individuals who are motivated by higher order needs will experience the satisfaction of the need when they receive feedback that their personal efforts have resulted in something they believe

to be worthwhile. Hence, workers capable of higher order need satisfaction will be most likely to achieve such satisfaction if their work is personally meaningful and the job situation provides feedback on the adequacy of their work efforts.

In summary, a job which permits workers to satisfy higher order needs will be so designed that the workers feel personally responsible for a significant and meaningful segment of the task, receive an outcome which is personally meaningful and receive feedback about the results of their efforts. If workers desire higher order need satisfaction and work conditions are as stated above, then hard work toward organizational goals will result in higher order need satisfaction which, in turn, produces an escalating motivation to continue working hard and receiving satisfying outcomes. Further, the organizational goals of high quantity and high quality performance will be met.

If the above are the general factors which affect employee satisfaction and organizational goal attainment, how might specific job characteristics which lead to this state of affairs be defined? Hackman and Lawler turned to the concept of Requisite Task Attributes (RTA) as defined by Turner and Lawrence (1965) to seek an operational definition for these task characteristics. They proposed that four of the RTA (autonomy, task identity, task variety, and feedback) would provide adequate specifications for the design of the job to allow exploration of proposed relationships.

The job must allow the workers to feel personally responsible for a meaningful part of the work, as well as for the outcome. The concept of autonomy appears applicable, for if workers are allowed

autonomous functioning, they are more likely to attribute success and failure to their own efforts rather than to those of others. Benefiting from favorable results of one's efforts results in a sense of accomplishment and self-esteem.

The second general characteristic of work which offers opportunity for higher order need satisfaction is that the job yields a product which is personally meaningful to the workers. Obviously, if outcomes of one's endeavors were not personally valued, one would gather little self-gratification from them and would not work for them.

Two attributes of a job enhance its potential to yield outcomes which would be valued by individuals desirous of higher order need satisfaction: The first is task identity, the production of an identifiable whole piece of work which allows workers to recognize that they have accomplished something. Such jobs have four basic attributes: (a) there is a definite sense of a cycle of beginning and ending a transformation; (b) the transformation process is easily identifiable by the workers; (c) the presence of the transformation in the product is readily identified; (d) the transformation is of significant magnitude.

The second attribute of a job which provides workers with a personally meaningful product is the variety present. Variety, which challenges without overwhelming workers, allows for the utilization of many skills and is likely to be perceived as meaningful.

The final general characteristic of a job with a high potential for satisfying higher order needs in workers is ability to provide feedback to workers concerning the quality of their performance.

Feedback may come from the work itself, or from others, but it must be presented in a way that is believable and comprehensible. Without this knowledge of results workers are unable to obtain higher order need satisfaction.

One further point must be made about the effect of these four job attributes on workers. Hackman and Lawler explicitly state that it is not

. . . their objective state which affects employee attitudes and behavior, but rather how they are experienced by the employees. Regardless of the amount of feedback (or variety, or autonomy, or task identity) a worker really has in his work, it is how much he perceives that he has which will affect his reactions to the job . . . there are often substantial differences between the objective job characteristics and how they are perceived by employees. . . .(Hackman & Lawler, 1971, pp. 265-266)

In summary, the internal motivation to work in workers desirous of higher order need satisfaction may be affected by perceptions of the objective characteristics of jobs. Jobs which are perceived to be high in autonomy, task identity, task variety, and feedback should provide the greatest potential for satisfying higher order needs. In fact, the harder the workers perform such a job, the greater the satisfaction. As mentioned earlier in this section, the concept of task attributes is based on the Lawrence and Turner research. However, Herzberg's influence, activation theory, and socio-technological theory are also clearly seen.

From these theoretical considerations, the authors then set forth to test their propositions empirically. Following definitions of Turner and Lawrence, measures of the four critical core conditions (autonomy, task identity, task variety, feedback) were developed. In

addition, the job attributes of dealing with others and friendship opportunities were operationalized. These two variables follow Turner and Lawrence's study with very little modification; they were intended to provide some measure of the interpersonal nature of the work situation. The former describes the extent to which workers must interact with others in order to complete their work; the latter measures availability of opportunities in work to develop informal relationships among workers. The final independent variable defined was individual need strength: the degree to which an individual desires higher order need satisfaction.

Measures of several dependent variables were developed to assess employees' reactions to their jobs. Included were experienced work motivation, job involvement, general job satisfaction, and satisfaction with various specific aspects of work, such as pay and supervision. Work motivation items assessed both the amount of intrinsic motivation experienced by workers and focus of that motivation. Three foci of the internal pressure to perform work were considered:

- (a) pressure to evaluate one's own work; to monitor it,
- (b) pressure to produce high quality work, and
- (c) pressure to yield a high quantity of work.

Job involvement items were the three used by Lodahl and Kejner (1965); they were intended to indicate the degree to which the employees were personally involved in their work. The final dependent variables were measures of performance (quality, quantity, and effectiveness) and absenteeism.

In summary, measures of six independent variables were developed. They included the four core characteristics: autonomy, task identity,

task variety, feedback, and two interpersonal factors: dealing with others and friendship opportunities. Employee reactions to the job were assessed in the following areas: experienced work motivation, job involvement, general job satisfaction, specific job satisfaction, absenteeism, and performance with respect to quality, quantity, and effectiveness. A measure of employees' desire for higher order need satisfaction was also included.

The resulting questionnaire was then administered to 208 employees working within 13 different jobs in a telephone company. Supervisors of these employees were asked to respond to a similar questionnaire which required them to describe their employees' jobs. The researchers followed this pattern after a period of observation. The data were then analyzed in order to answer the following research propositions:

1. The theory holds that the employees' perceptions of job characteristics rather than objective characteristics are more important in determining their reactions to the job. To test this proposition, relationship between perceived task characteristics and workers' responses to task were computed for each job, then compared to the same relationship across all subjects and jobs. The authors assumed that by restricting analysis to within-job data, effects of between-job differences would be controlled and perceptual differences would be more prominent.

2. The theory specifies that workers' reactions to the job should be most positive when all four core conditions are present. To test this assumption, dependent variable values were compared (a) for the employees who saw their jobs as moderately high on

all four, (b) for those whose jobs were described as high on some conditions and low on others, (c) for those who perceived their work as low on all four conditions.

3. The theory suggests that the strength of individual desire for higher order need satisfaction will moderate the relationship between perceived characteristics of jobs and reactions to the jobs. To test this concept, subjects were divided into thirds, according to their scores on individual need strength; the highest and lowest groups were then compared on the strength of their characteristic/reaction relationships.

4. Relationships within interpersonal factors and dependent variables are unspecified by the theory, so exploratory analyses were conducted.

5. As an index to degree of objectivity in employee perceptions of task characteristics, appraisals of job characteristics which were made independently by employees, their supervisors, and researchers were compared for agreement.

Results of data analyses generally confirmed propositions of the theory. Employee reactions/task characteristics relationships were generally positive; in most cases it was significant, as determined by correlational statistics. This was expected as the mean score on individual need strength was 6.01 out of a possible 7.00. The authors concluded that employees generally had a high value for these higher order needs, or they felt that it was appropriate to at least express a desire for them. Independent variables may be subdivided into core characteristic factors and interpersonal factors; they will be examined along these lines.

Core dimensions showed a positive relationship to employee experience of an internal motivation to perform well. This motivation was directed not only toward taking personal responsibility for work but producing a high quality rather than large quantities of it. Further, evidence indicates that jobs high on these characteristics allow employees to gain positive feelings of self-worth when they perform well.

Employees working on tasks high on core dimensions showed better attendance records, demonstrated higher general satisfaction with work, and were more personally involved in their work. The authors contended that core factors increased job involvement and satisfaction, which in turn yielded fewer absences.

Specific satisfactions showed an almost unanimous positive correlation with core task characteristics. Hackman and Oldham (1975) suggest that while this was not predicted it may be explained because overall satisfaction is likely to be strongly influenced by satisfaction with the particular aspects of the work situation addressed by the twelve specific satisfaction items. Specific satisfactions showing highest correlations with core conditions were concerned with higher order needs; those with weakest relationships may be classified as lower order needs.

Interpersonal dimensions of work failed to show as strong a relationship with dependent variables as do core characteristics. "Dealing with others" showed no significant positive relationship to motivation, performance, or absenteeism; "friendship opportunities" related only to quality aspects of performance at a significant level. The latter showed significant correlations with all specific

satisfactions; both correlated significantly with general job satisfaction. Specific areas of satisfaction most highly related to interpersonal factors deal with interpersonal issues, which the authors interpret to mean that the kinds of consequences to be expected from designing jobs with interpersonal characteristics in mind are predominantly social. They are not associated with increased motivation or productivity.

Another proposition of the theory in question was that objective characteristics of a job influence worker perceptions of the job which, in turn, influence worker reactions to the job. Data implied that employee perceptions of jobs did not differ substantially from descriptions offered by supervisors and researchers. If the latter assessments are considered to be the more objective, the conclusion is that employee perceptions are indeed influenced by objective characteristics of the task. The next question then is: are the employee reactions to the job the direct result of job characteristics, or do individual perceptual processes moderate the relationship? By comparing the median correlation of within-job relationships with correlations computed across all subjects, the researchers were able to establish that perceptual differences did influence the relationship.

Data were also analyzed to determine optimum relationships among core characteristics which would produce the most positive reactions to work. Subjects were divided into three groups (jobs high on all four characteristics vs. high on some vs. low on all four). When their dependent measures were compared, data indicated reactions to their jobs were significantly higher when all four core conditions were high. When the relative merit of the three methods of combining task

characteristic data were compared, however, the multiplicative disjunctive model specified by the theory was not found to be superior to other theories. The two alternative models were (a) an unweighted sum of values for each characteristic, which was then correlated with each dependent variable, and (b) a linear, multiple regression equation in which core conditions were independent variables used to predict each dependent factor. In conclusion, the model defined by the theory was not rejected; neither was it supported as being more adequate than other models of combining core dimensions to predict employee affective responses to work.

The final theoretical assumption to be tested was the moderating effect of higher order need strength on task characteristic/affective reaction relationship. The assumption had been that only persons desirous of higher order need satisfaction would respond positively to core conditions. To answer this question, subjects were divided into high, middle, and low groups based upon individual need strength scores. As previously mentioned, the mean for all subjects was quite high; the group means reflect this skewness (high mean = 6.78; low mean = 5.09). The mean for the bottom one-third of the subjects is still over a point greater than the midpoint of the potential response range. Thus, the "low" subjects are actually quite "high" in an absolute sense. Strength of task characteristic/affective response relationships were compared for the two extreme groups. Results generally support the moderating effect of individual need strength. This is particularly true for variety and autonomy; true, to a lesser degree, for feedback. Task identity, however, showed little difference between groups. The authors explained this by pointing out that

jobs highest on task identity within this sample (telephone operator) were lowest in autonomy and variety. To test this thesis, the authors computed the product of the four core characteristics for each member of the high and low groups, then correlated these values with measures of motivation, performance, and satisfaction. There were some pairs of correlations in which the high group had a significantly stronger relationship than did the low group. Typically, however, most correlations were positive and significant.

While the above results generally support relationships specified by the theory, there are six issues of concern which must be critically evaluated. At the theoretical level, the authors used the concept of job involvement in a fashion which is contrary to its original conceptualization. Hackman and Lawler (1971) include this variable among affective reactions to one's job. Lodahl and Kejner (1965) conceived and operationalized the term as a value state which determines the extent to which individual self-esteem is derived from work or non-work activities and which is independent of the nature of the specific job on which persons are working. Further, Hackman and Lawler imply a positive collinearity within job satisfaction, job involvement, and attendance. However, it is clearly stated that job involved persons are not necessarily happy with their jobs; in fact, very angry people may be just as involved in their jobs as very happy ones (Lodahl & Kejner, 1965).

Additional support for this line of reasoning derives from a reinterpretation of the finding that in jobs higher on core dimensions workers are more job involved, that they gain additional self-esteem from their work. In most organizations, the farther up the

hierarchical ladder the job is found, the higher it is on core dimensions. High job involvement is a culturally valued trait and individuals who possess it tend to be promoted more readily and to leave their jobs less often. Therefore, high job involvement may be a determinant of the level of position held rather than the converse. This possibility was not explored by Hackman and Lawler.

Inclusion of job involvement among the dependent variables must be questioned, as its more proper position appears to be moderator of job characteristics/self-esteem/satisfaction relationship. This is an important factor because the enhancement of self-esteem through growth opportunities is central to development of personal satisfaction and the self-feeding system of motivation described by Hackman and Lawler (1971).

A second theoretical supposition which is suspect is the issue of individual expectancies of a valued outcome following work behavior and the role of this expectancy in the motivation of behavior. The authors suggest that work may be so designed that feedback about one's efforts is received. From this feedback one has a feeling of personal responsibility for the outcomes of one's endeavors: the product itself, intrinsic, or extrinsic personal outcomes. This supposition is also tied with the concept of autonomy as the authors state that highly autonomous jobs provide individuals with feelings that successes and failures are their own; low autonomy jobs may lead workers to feel that successes and failures are due to others' influence rather than to one's own efforts. The authors firmly established that individual perceptual differences do influence the relationship between objective job characteristics and employee reactions to them.

So, it follows that the existence of a generalized task independent individual difference in expectancy concerning reinforcement of one's efforts might also influence this relationship, perhaps even more pervasively than task characteristics. Such an expectancy might distort worker perceptions of the autonomy or feedback inherent in the task design, ultimately frustrating attempts to redesign jobs in the absence of knowledge of job influences. Generalized expectancy of reinforcement control of one's behavior (locus of control) does exist, and its effects are well documented (Rotter, 1966). So, investigation of the influence of this factor on Hackman and Lawler's model seems worthwhile.

A third theoretical proposition which might be re-evaluated is the conceptualization of individual higher order need strength and the nature of its suggested relationship with task characteristics and worker affective response to the task. The motivating force for individual behavior is the magnitude of the value the person attaches to the anticipated outcome of behavior. The value is determined by the strength of the underlying need. According to Maslow (1970), all humans possess five categories of needs which may be grouped into higher order needs and lower order needs; individual need strength (Hackman & Lawler, 1971) is a measure of the potency of higher order needs.

The authors suggest that jobs which are high on the core dimensions should be motivating only to individuals who are desirous of the intrinsic rewards that the jobs provide, namely, higher order need satisfactions. Further, it is stated that not all employees can or will respond to opportunities for the satisfaction of higher order

needs, and thus motivational approaches based on the needs cannot be applied indiscriminantly. Persons who are desirous of higher order need satisfaction (e.g. personal growth) will respond to core characteristics by producing quality performance, with high levels of general job satisfaction and low absenteeism.

There are several objections to this proposition: First, the concept that all persons do not desire higher order need satisfaction is contrary not only to Maslow's theory (1970) but to several empirical personality theories and observed phenomena. According to Maslow, an individual would necessarily be quite deprived of lower order needs in order to completely ignore higher order needs, which is an unusual circumstance in our affluent society. Hence, most people should be motivated by the need for personal growth (although perhaps not through the medium of work).

Carl Rogers supports the contention that all persons possess the desire for satisfying higher order needs as he writes:

By this I mean the directional trend which is evident in all organic and human life - the urge to expand, extend, develop, mature - the tendency to express and activate all the capacities of the organism, or the self. This tendency may become deeply buried under layer after layer of encrusted psychological defenses; it may be hidden behind elaborate facades which deny its existence
(Rogers, 1961, p. 351)

Therefore, motivation to satisfy these growth directed needs is present in all humans, but it may not be readily evident simply by observing personal behavior.

Hackman and Lawler (following Maslow) suggest that failure to obtain job satisfaction in the presence of higher order need satisfiers is evidence for absence of those needs in some individuals. The

assumption is that the presence of the need results in the valuation of satisfying that need through a given behavior as well as the persons' movements toward the goal of satiation. Hence the person's need system defines individual values. Most therapists will quickly agree that frequently peoples' values are not aligned with their needs, that the result is often self-defeating behavior and personal dissatisfaction. The authors suggest that the behavior pattern will not continue unless there is satisfaction, yet the intractability of paradoxical neurotic behavior is well-known (Maher, 1966).

Data gathered by investigators also support the need to critically evaluate definition and role of higher order need strength in this model. The mean score for individual need strength was 6.01, out of a possible 7.0, with a negatively skewed dispersion (top one-third mean = 6.78; bottom one-third mean = 5.09). The authors accepted these values to mean that all subjects possessed a high motivation toward personal growth. But, considering the skilled to semi-skilled blue collar nature of their sample, they assumed that the sample was unusual, so theoretical assumptions were not questioned. An alternative explanation is that all humans do indeed desire higher order need satisfaction, an alternative suggested previously in this paper. Another alternative to which Hackman and Lawler alluded is that responses were biased by social desirability; therefore, they discriminated poorly among subjects along this dimension.

Difficulty in measuring the concept of higher order need strength is evident, not only from the skewed means presented in the study, but also in the limited differentiation along predicted lines between groups high and low on this factor. The authors

attempted to differentiate between reactions to task characteristics for individuals who were either high or low on this factor and who worked on jobs which were high on all four core characteristics. Of the 22 affective reactions to their work, 19 were significantly correlated with task characteristics for the high need strength group; 10 were significantly correlated for the low need strength employees. Furthermore, only eight of the 22 pairs of correlations showed a significant difference in magnitude between the two groups; four of those involved lower order needs or interpersonal relationships. Therefore, both groups responded positively to issues to which only the high groups should have responded; also, the high group's response to lower order needs was apparently moderated by higher order need strength. Clearly, there are sources of variance which moderate task characteristic/affective reaction relationships which have not been identified. These unidentified influences cloud the interpretation of the hypothesized influence of desire for personal growth from job related activities on job satisfaction. If this theory is directed to higher order need strength persons only, then this conflict must be resolved.

A fourth major theoretical issue is the inclusion of all of the specific satisfaction variables among the dependent variables. The authors state the overall satisfaction is likely to be strongly influenced by satisfaction with the particular aspects of the work situation addressed by the twelve specific satisfaction items. Some of these items tap satisfaction with higher order need strength issues; other items are associated with lower order needs. It has been mentioned above that higher order need strength increases

employee reactions to some lower order need satisfiers (e.g. security, friendship opportunities), that many of these reactions are significantly correlated to task characteristics. These findings are inconsistent with predictions of the theory, and it is suggested that inclusion of lower order needs within dependent variables represents confusion over the theory's purpose. If the theory is to predict general satisfaction with a job such that turnover may be lessened, then a variety of factors must be considered and lower order need satisfiers should be included, but as independent variables. If, on the other hand, the theory is focused only on the promotion of personal growth among employees by the redesign of jobs vis-a-vis core dimensions, then lower order need satisfiers should be excluded from the formula. A decision must be made.

The next major criticism of the theoretical foundation of this study is the unipolar perspective taken on the quantification of core dimensions. The authors assumed that if some of a core characteristic is good, then more must be better. This is clearly not the case with task variety, a dimension in which an excess could be aversive to persons (see the previous discussion on Activation Theory). The authors also failed to consider the possibility that worker responses to one task characteristic may be dependent upon the amount of that characteristic present, as well as the relative amounts of other characteristics that are present; i.e. is the optimal combination ratio of these characteristics dynamic or fixed at 1:1:1:1? Also not considered is the possibility of a task being high on core dimensions, yet possessing other characteristics which are aversive to workers. This might be particularly true in the field of nursing.

The final issue in this study requiring re-evaluation is the impact of interpersonal relationships at work on job satisfaction. The authors concluded that the interpersonal dimensions of work do not induce personal growth; therefore they show no significant relationship to maintenance of high job satisfaction and performance. On a logical level, this is contradictory to the concept of personal growth, for it is difficult to conceive of any individual self-actualizing independently of their social system. The authors state:

. . . the kinds of consequences to be expected from having jobs with high interpersonal components (as measured in this research) are primarily social in nature--rather than being relevant to the performance and motivation of employees as is the case for jobs high on the core dimensions.
(Hackman & Lawler, 1971, p. 275)

Their data, however, suggest contradictions to this stance. Both "dealing with others" and "friendship opportunities" show a positive significant relationship with the feedback dimension. It might be assumed that as to one's performance other people are a significant source of feedback. The theory clearly states the need for feedback.

Friendship opportunities are also significantly related to task variety and autonomy. For individuals who do not particularly value work per se (i.e. low job involved) the friendship dimension may provide enough personal growth opportunities by increasing variety in work, thus maintaining satisfaction with work setting and high job performance. Autonomy may be a prerequisite for the freedom to pursue friendship interests. Friendship opportunities do, indeed, show a significant positive correlation with internal motivation to perform high quality work. The correlation is of the same magnitude as are those for core dimensions.

Interestingly, both of the interpersonal dimensions show negative correlations with the actual work performance in terms of quality, quantity, and effectiveness. Most organizations are designed in such a way that organizational goals are concerned with production, that social activities do interfere with production. However, these data suggest that jobs designed to encourage personal growth through social interaction may effectively maintain high performance and satisfaction for some employees.

Finally, it should be noted that friendship opportunities correlate significantly and positively with all twelve specific satisfaction items. They may even be a factor which buffers against dissatisfaction, if other conditions are not satisfactory.

In summary, six major criticisms of this study challenge its theoretical foundation:

1. nature and role of higher order need strength;
2. misuse of the concept of job involvement;
3. failure to account for individual difference in generalized expectancies of the control of reinforcement;
4. use of lower order need satisfaction as a dependent variable;
5. assumption of a linear effect of core dimensions; and
6. exclusion of interpersonal relationships from a significant role in the formulation. Future exploration of this theory had to take into consideration some of these deficits.

An extension of the theory. After reviewing literature on job design, Hackman and Oldham (1975) concluded that a major difficulty with job redesign was the inability to accurately measure constructs involved before and after changes occur. Attempting to rectify such

a weakness in the field, they began the process of developing an adequate instrument. They based their work upon the theoretical foundation established by Turner and Lawrence (1965) and Hackman and Lawler (1971). Revisions in the underlying theory occurred concurrently with the development of the assessment device, the Job Diagnostic Survey (JDS). The two are somewhat difficult to separate. This section will present the modified theory established by Hackman and Oldham. It will also examine the relationships within critical variables which were suggested by the original theory and revised during the development of the test instrument. Finally, the theory will be examined vis-a-vis criticisms previously set forth by this investigator for Hackman and Lawler's (1971) postulations.

With a few modifications the tenets of Hackman and Oldham's theory are the same as Hackman and Lawler's. The former theorists proposed that workers' affective responses to work are influenced by a set of core job dimensions, that this relationship is moderated by workers desire for satisfaction of higher order needs. In addition, they maintain that not all workers desire higher order need satisfaction; that those who are not so desirous may actually feel discomfort rather than satisfaction if the job is high on core dimensions.

Hackman and Oldham posit an intermediate step in the core job dimensions/personal and work outcomes relationship which was not previously considered. This step is the development of critical psychological states in the worker which, in turn, are responsible for development of personal and work outcomes. The authors suggest a multiplicative disjunctive model for these concepts, in which all

core conditions must be present in high quantities in order to produce all critical psychological states at high levels. If all critical psychological states are present in high quantities only then will high levels of each personal and work outcome occur (See Figure 1).

Although Hackman and Oldham retained the four core job dimensions presented by previous research, they added task significance to their list. Core conditions and their definitions follow:

1. Skill variety is the degree to which a job requires a variety of different activities in carrying out the work, which involve the use of a number of different skills and talents of the employee.
2. Task identity is the degree to which the job requires completion of a "whole" and identifiable piece of work--i.e., doing a job from beginning to end with a visible outcome.
3. Task significance is the degree to which the job has a substantial impact on the lives or work of other people--whether in the immediate organization or in the external environment.
4. Autonomy is the degree to which the job provides substantial freedom, independence, and discretion of the employee in scheduling the work and in determining the procedures to be used in carrying it out.
5. Feedback from the job itself is the degree to which carrying out the work activities by the job results in the employee obtaining direct and clear information about the effectiveness of his or her performance. (Oldham et al., 1978, pp. 5-6)

The authors state that any job may be defined in terms of its Motivating Potential Score (MPS) which is obtained by measuring the

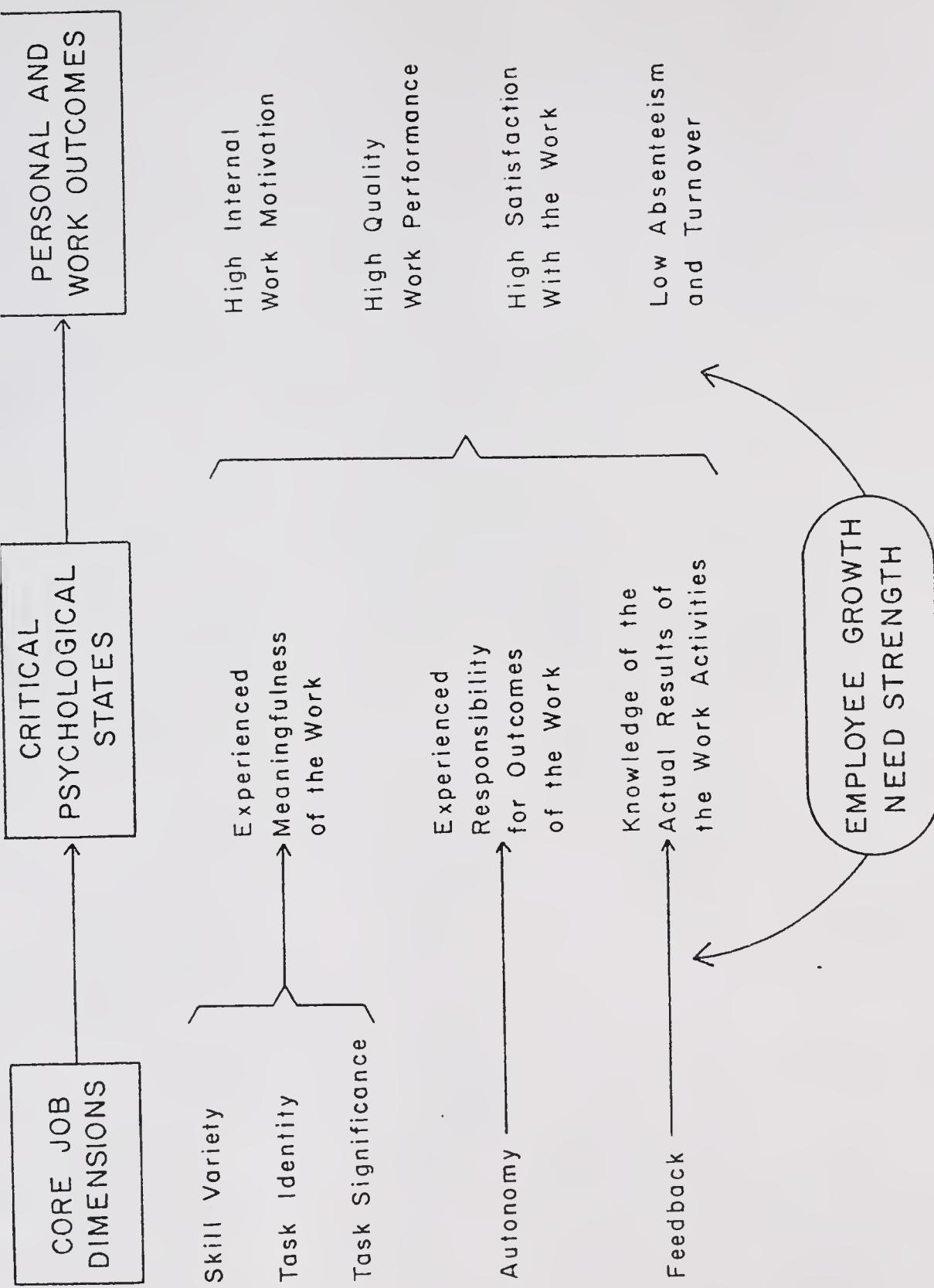


Figure 1

The Relationships Among the Core Job Dimensions, the Critical Psychological States, and On-the-job Outcomes

presence of core dimensions, then computing the MPS on the basis of the following formula:

$$MPS = \left(\frac{\text{Skill Variety}}{3} + \frac{\text{Task Identity}}{3} + \frac{\text{Task Significance}}{3} \right) \times (\text{Autonomy}) \times (\text{Feedback}).$$

The MPS is a composite score which describes the job in terms of its ability to motivate individuals through its potential to satisfy higher order needs. It was previously noted that a multiplicative and disjunctive model such as this one specified that all core dimensions must be present in high quantities in order to produce a high MPS.

Two additional job characteristics are suggested by Hackman and Oldham as being important in understanding worker job response:

(1) feedback from agents and (2) dealing with others.

The definitions of these variables follow:

1. Feedback from agents is the degree to which the employee receives clear information about his or her performance from supervisors or from co-workers. (This dimension is not, strictly speaking, a characteristic of the job itself. It is included to provide information to supplement that provided by the feedback from the job itself dimension.)
2. Dealing with others is the degree to which the job requires the employee to work closely with other people in carrying out the work activities (including dealing with other organization members and with external organizational "clients."). (Oldham et al., 1978, pp. 5-6)

The relationship of these two variables to core dimensions is not specified by Hackman and Oldham (1971) although it is suggested that they do provide supplementary information. Hackman and Lawler's work demonstrated positive correlations between these characteristics and feedback from the job itself so it might be hypothesized that they are related to the feedback dimension.

According to the theory the five core conditions are responsible for the development of three critical psychological states in the worker. These variables and their definitions follow:

- a. Experienced meaningfulness of the work is the degree to which the employee experiences the job as one which is generally meaningful, valuable, and worthwhile.
- b. Experienced responsibility for work outcomes is the degree to which the employee feels personally accountable and responsible for the results of the work he or she does.
- c. Knowledge of results is the degree to which the employee knows and understands, on a continuous basis, how effectively he or she is performing the job. (Oldham et al., 1978, pp. 5-6)

According to Hackman and Oldham, experienced meaningfulness is primarily determined by core dimensions task variety, task identity, and task significance; autonomy influences experienced responsibility; knowledge of results is determined by the feedback dimension. As with core dimensions, each one of the critical psychological states must be present in a high degree in order to produce high levels of personal and work outcomes. While these intermediate factors were not specifically included in the Hackman and Lawler formulation of job dimension/affective response as measurable variables with a definite role, they were stated as necessary conditions for the process:

. . . to establish conditions for internal work motivation, then, it appears that a job must:
(a) allow workers to feel personally responsible for an identifiable and meaningful portion of the work, (b) provide work outcomes which are intrinsically meaningful or otherwise experienced as worthwhile, and (c) provide feedback about performance effectiveness. (Hackman & Lawler, 1971, pp. 262-263)

Hence, these intermediaries reflect operationalization of phenomena previously alluded to by Hackman and Lawler, which is not a radical departure from the prior theory.

Reactions to core dimensions, or work outcomes, include two subgroups: personal outcomes and actual work outcomes. The latter group includes absenteeism, turnover, and performance, which are self-explanatory. Personal outcomes are defined as affective reactions to the job. They include general satisfaction, internal work motivations, and specific satisfactions. Definitions of these terms follow:

1. General satisfaction is an overall measure of the degree to which the employee is satisfied and happy with the job.
2. Internal work motivation is the degree to which the employees are self-motivated to perform effectively on the job--i.e., the employees experience positive internal feelings when working effectively on the job, and negative internal feelings when doing poorly.
3. Specific satisfactions are positive affective responses to each of the following job components:
 - (a) job security
 - (b) pay and other compensation
 - (c) peers and co-workers ("social" satisfaction)
 - (d) supervision
 - (e) opportunities for personal growth and development on the job ("growth" satisfaction). (Oldham et al., 1978, pp. 5-6)

The work outcomes component of the theory shows several deviations from Hackman and Lawler's (1971) work. First the concept of job involvement and many of the twenty-two specific satisfactions have either been eliminated or grouped together. Second, Hackman and Lawler had

hypothesized that workers might experience some degree of intrinsic work motivation from the job which could have three foci. The experience of intrinsic motivation and its foci were separated by Hackman and Oldham, then measured independently. Only one focus was retained: the pressure to produce quality work. Each of these changes is based on results of the Hackman and Lawler study. They reflect a more parsimonious conceptualization which better coincides with the empirical evidence. It should be noted, however, that four lower order needs continue to be included within dependent variables which has been criticized previously in this paper.

The final major component of the theory, growth need strength (GNS), is defined as the extent to which the individual desires higher order need satisfaction and will respond positively to jobs objectively high on core conditions. This individual difference variable is proposed to moderate relationships between core job dimensions and critical psychological states, as well as between critical psychological states and personal and actual work outcomes. A visual summary of specified relationships of this theory was presented in Figure 1.

In summary, the theory of job satisfaction proposed by Hackman and Oldham is quite similar to that proposed by Hackman and Lawler. However, some factors, as determined by previous empirical data, have either been eliminated or added. Typically, they reflect a move toward parsimony and theoretical/empirical congruence.

Hackman and Oldham (1974, 1975) operationalized their concepts and developed the Job Diagnostic Survey (see Chapter III for elaboration of the developmental process) which was then used to test the

theory. It was administered to 658 employees working on 62 different jobs in seven organizations, including both service and industry oriented businesses. Workers were heterogeneous in job level, were 59 percent male, possessed a median age of 29, and an educationally ranged from grade school to graduate degree. In addition, supervisors and researchers completed the Job Rating Form for each job. This instrument is a parallel form of the Job Diagnostic Survey (JDS) which allows assessment of the core conditions by persons not performing the job. Supervisors also provided work effectiveness data for each employee; absentee data were obtained from company records.

Generally, results of this study were as predicted. Job ratings performed by employees, their supervisors, and researchers were correlated to obtain a measure of the objectivity of the core dimensions section of the JDS; the data typically support its objectivity. Median correlation ranged from .46 (supervisors and observers) to .63 (employees and observers), although the category feedback from agents ranged from .07 to -.13. These correlations are satisfactory even though they are generally lower than those obtained by Hackman and Lawler (1971).

Generally, relationships among the subscales are also as expected. Core dimensions are moderately and positively intercorrelated. They are positively related to measures of internal work motivation, general satisfaction, and critical psychological states. Further, growth need strength measures were satisfactorily independent of other variables. This is an important consideration for a moderating variable.

Substantive validity of theory and scale is evident from the finding that core dimensions are positively correlated with personal work outcomes at the .01 level of significance and with measures of absenteeism and performance at the .05 level.

Hackman and Oldham (1974, 1975) conducted further data analyses to investigate the proposed job dimension/psychological states/work outcomes relationship and the extent to which growth need strength serves as a moderator. To explore the first of these issues the authors sought the answers to three questions:

1. Are all three critical psychological states necessary to optimally predict work outcomes?
2. Do core dimensions predict work outcomes equally as well if critical psychological states are excluded?
3. Do specific job dimensions relate to specific critical psychological states as suggested by the theory?

Outcome variables employed included internal work motivation, general satisfaction, and growth satisfaction.

Results suggested that inclusion of all three psychological states as predictors in a multiple regression equation increases the amount of variance accounted for in prediction of affective responses of workers to their jobs. The difference in mean R^2 when only two states were used as opposed to when all three are employed, is small so this interpretation must be made with caution.

The answer to the second question was sought in two ways, the first by calculating correlations between each core dimension and work outcomes with and without subtracting partial correlations of the psychological state specific to that core dimension. Results indicated

that controlling for partial correlation of psychological states reduces zero-order correlations to near zero for all core dimensions, except autonomy and feedback. Thus, three core dimensions upheld the influence of the psychological states.

A second analysis was conducted to explore this proposed relationship. Psychological states were used as predictors of work outcomes; job dimensions were introduced as secondary predictors. Again, with exceptions, findings generally support mediating influence of psychological states. Experienced responsibility shows negligible effect on prediction of general satisfaction and growth satisfaction; knowledge of results shows little influence on prediction of any of the three independent variables.

The final question to be answered concerned the relationships between specific core dimensions and psychological states. Results suggest that, with the exception of autonomy, the job dimensions do account for a moderate amount of variance in their respective psychological states. Also, regression R^2 's for each of the core dimensions, except autonomy suggest that each of them contributes to this experienced responsibility.

In summary, results generally support predicted relationships for critical psychological states. However, mediating effects of experienced responsibility and knowledge of results are called into question; the relationship between autonomy and experienced responsibility is suspect.

The theory proposes that persons high on growth need strength (GNS) are better able to experience psychological effects of an enriched job. Too, they are more likely to respond favorably to these

psychological effects. Hence, high GNS individuals should show stronger relationships between core job dimensions and psychological states, as well as between critical psychological states and work outcomes. To examine the validity of this contention, subjects falling into upper and lower quartiles of the GNS score were compared in strength of the aforementioned relationships. Results supported the moderating effect of GNS in each instance. However, the effect was weak between psychological states and work outcomes, as well as on the feedback-knowledge of results relationship. Also, relationships of the psychological states with absenteeism is unaffected by GNS. Apparently, either GNS has less influence in these spheres or other sources of variance are unaccounted for.

The Hackman and Lawler (1971) investigation also considered the relative ability of several models for combining job dimensions for predicting work outcomes. Although Hackman and Oldham repeated this investigation, no significant benefit of one over another was found.

Hackman and Oldham have revised concepts of job satisfaction as set forth by Turner and Lawrence (1965) and Hackman and Lawler (1971). They have also established empirical support for their revised model. The proposed relationships between core job dimensions and work outcomes were supported with the exception of absenteeism and work performance. There was also support for the moderating effect of GNS at each of the theory specified links, again, with the exception of absenteeism. The authors offer a variety of possible explanations for these negative findings: (1) inflationary influence of common method variance, (2) data collection anomalies, and (3) greater causal remoteness of behavioral outcomes from affective outcomes. Perhaps,

for some individuals positive affective response to work is present, but not because of core dimensions. Thus, they feel less bound to the job (e.g. low job involved persons with satisfying social relations on the job). The influence of interpersonal relationships to affective response to work was not considered by the investigators even though such variables are included in their model and previous data (Hackman & Lawler, 1971) suggest their relevance.

Although there is strong support for mediation of core dimension/work outcome relationships by the psychological state factor, again, there are exceptions. Specifically, feedback dimension and autonomy-experienced responsibility components are problematic. The authors suggested the need to further explore the dynamics of these relationships. One line of reasoning previously mentioned by this writer is the potential influence of a generalized expectancy of reinforcement on this model, i.e., locus of control. Also, though dealing with others and feedback from agents were suggested by the authors as potentially influencing feedback, they were not considered in this study.

The nature and role of growth need strength has been somewhat clarified by this study. The authors succeeded in increasing discriminative power of assessment items as the mean value for GNS in this study was 5.62, rather than 6.01 (Hackman & Lawler, 1971). There were several groups of persons who scored quite low on the scale. However, even with the lowest quartile of subjects signs of the relationships between job dimensions and work outcomes were positive

and correlations were of a reasonably high magnitude. Hence, there is not support for the contention that persons low in GNS will respond negatively to enriched jobs or that they will fail to respond positively. They may respond less positively than those high in GNS but they are not unaffected by enriched jobs. Neither can it be said that GNS, alone, influences the relationship.

MPS is used as a summary score for core job dimensions. It is calculated following a multiplicative model. This study failed to support this model over others. In fact it demonstrated that this model is the least predictive (although not significantly so) of the five that were considered. Clearly, this assumption needs further study.

Improvement was made when job involvement was eliminated from dependent variables, although the question of its influence on worker self-esteem and work satisfaction remains unanswered. An outcome of personal growth through work is heightened self-esteem and, by definition, job involvement could influence this relationship.

Criticism of including lower order need satisfiers with work outcomes is still pertinent. When specific satisfactions were reduced in number, only one of the five left was not related to a lower order need. Only two of these were examined in this study: social satisfaction and supervision. These two show moderate correlations with core dimensions and psychological states, a finding which is clearly contrary to the underlying theory of needs. The effect of including these factors as independent variables remains to be determined.

Finally, the authors continue with the concept of a positive linear relationship between core dimensions and work outcomes. With

skill variety this proposition is contradicted by activation theory (Scott, 1966) which suggests a parabolic relationship. There is also the unexplored potential influence on work outcomes of aversive characteristics of a task.

Current research. The JDS, its theory, and the field of job design have attracted a good deal of research in the past few years, much of which has been reviewed by Pierce and Dunham (1976) and Oldham, Hackman, and Stepina (1978). This section will briefly review this literature, with particular emphasis placed upon information concerned with this author's criticisms of both theory and instrument.

Most of the current research supports the tenets of Hackman and Oldham's position. Several studies have added support to the proposal that skill variety and autonomy are significantly related to job satisfaction (Hackman, Oldham, Janson, & Purdy, 1974; Keller, Szilagvi, & Holland, 1975; Stone & Porter, 1975). This point seems to require little additional support. Beer (1968) had previously noted that in clerical workers engaged in routine vs. complex tasks there was no apparent difference in need satisfaction or perceived opportunity for need satisfaction between the two groups. Beer concluded that skill variety was not a good predictor of higher order need satisfaction. Hill (1975) presented the same findings with groups of women working on a repetitive task but also found an age/skill variety interaction in which older subjects showed less boredom with repetitive tasks than did younger subjects. This dispelled the only major criticism of the core dimensions/satisfaction relationship.

Along this same line, Katz (1978) explored the effects longevity in the job and within the organization had on task dimensions/work

outcomes relationships. He examined 3,500 persons in numerous heterogeneous jobs within four governments. The findings suggest that the length of time an employee has been working in a particular organization and in a particular job interact with core dimensions of a job to produce differential levels of job satisfaction. Those who are new to both settings react most positively to task identity and quite negatively to autonomy. Those who are "old" to the organization but "new" to the job seem to react most positively to the feedback from job dimension. Those who have more than 10 year's service also deviate from relationships posited by Hackman and Oldham as they seem to develop an indifference to task characteristics. Those who are neither newcomers nor longtimers show relationships between job dimensions and work outcomes as specified by the theory. Katz concludes that social structures through which individuals order their work worlds have a significant impact on their response to their work, that these social systems change with altered status of longevity.

Russell and Mehrabian (1975) explored the effects of arousal level on desire to work. They assumed that desire to work would decrease as arousal exceeded an optimal level. They concluded that task difficulty and pleasantness were related to maximum level of arousal individuals would accept without losing desire to work. Easy and pleasant tasks resulted in a higher tolerance for increased arousal before loss of desire to work. These findings from activation theory research are applicable to this author's logical criticism of Hackman and Oldham's proposed linear relationship between skill variety and job satisfaction.

Sims and Szilagvi (1975) examined the moderating effect of growth need strength and other individual difference variables on the job satisfaction/task design relationship among employees of a major hospital. They found that GNS was a significant moderator in the predicted direction, yet other variables, including locus of control, were not influential. As a linear model was assumed for the locus of control/job satisfaction relationship, findings leave unanswered questions.

An experimental study by Merrens and Garrett (1975) examined the effect of work values consistent with the protestant work ethic on worker responses to simplified low level tasks. Findings suggest that those endorsing protestant work ethic values produce more and devote more time to the task than do those who do not hold such values. These findings are contrary to results obtained by several other investigators (Schuler, 1973; Susman, 1973; Wanous, 1974) yet this study was more methodologically rigorous.

In summary, current research which has employed the Job Diagnostic Survey or explored the underlying theory supports many of Hackman and Oldham's propositions. However, typically it adds nothing to support or refute criticisms suggested by this writer. One piece of research did investigate the moderating properties of locus of control, but a less than desirable model was used. Another study suggests the possible influence of aversiveness of the task on work satisfaction yet does not clearly separate this factor from the work difficulty. Interactional relationships between core dimensions and variables such as age and tenure have been proposed. They imply that the model of Hackman and Oldham is misleading in its parsimony.

This author's criticisms of Hackman and Oldham's theory have neither been supported nor refuted by current research. Thus, this investigation will examine these previously stated theoretical conflicts. The remainder of this chapter briefly presents two constructs whose potential effects on this model will be posited, locus of control and job involvement. Finally, findings from the literature on job satisfaction in nursing which are relevant to the Hackman and Oldham model will be presented.

Locus of Control

Argyris (1964) has argued that individuals will experience pleasure with success only to the extent that they perceive themselves as being causally responsible for it. The same relationship would hold true for failure. This statement is both a cornerstone and a weakness for the theory underlying Hackman and Oldham's conception of job dimension/work outcome relationships. Their assumption is that a job not only may, but must, be designed in order to provide workers with the sense that they are personally responsible for the outcome of their endeavors. Such a feeling would result if the workers perceive a task to be high on the autonomy and feedback dimensions. The consequence is high levels of two psychological states, experienced responsibility and knowledge of results. Empirical findings have not adequately supported these relationships. Thus, it is a thesis of this research that this is due to a generalized, task independent, expectancy of reinforcement which can render workers unable to perceive and/or respond to the task dimensions autonomy and feedback.

Rotter (1966) has identified such an individual difference phenomenon which is termed locus of control. This belief system has been

defined previously in this paper. Its underlying theory and development will now be briefly presented. Because development and refinement of the construct parallels the same process for the measurement device, both histories will be discussed at this time.

Development of the Scale.

An initial attempt to measure differences in expectancy of control was conducted by Phares (1957), who used a 26-item measure which was developed on a priori grounds. In this first attempt, some success was attained when it was found that in skill vs. chance situations external subjects behaved similarly. Specifically, following either success or failure in skill situations, externals showed less tendency to adjust their expectations for future success or failure than did internals. Following success or failure in chance situations, external subjects demonstrated greater shifts in expectancy of future failure and success, respectively, than did internals. Externals clearly demonstrated a belief that probabilistic laws of chance determined events to a greater degree than did their ability to personally affect an outcome of a task.

Phares' scale was revised by James (Rotter, 1966) who first rewrote it in terms of items most successful at discrimination in Phares' work. Then filler items were added. James hypothesized that, regardless of skill vs. chance conditions of the task, externals' behavior would be in the same direction as the difference between the chance group and the skill group for all subjects; i.e., they would behave as if all tasks were controlled by chance. James' findings supported his contentions as externals (defined by his scale) showed smaller increments of expectancy shifts after success or failure at the task,

generalized less from one task to another, and showed less recovery after extinction trials. They also showed more unusual shifts in expectancy of future success, i.e., it increased after failure and decreased after success.

An attempt to broaden the scale, develop sub-scales, and strengthen control for social desirability was conducted by Liverant, Rotter, and Seeman (Rotter, 1966). They compiled one hundred forced choice items comparing internal and external beliefs and subjected the scale to item and factor analyses. The scale was reduced to 60 items by considering internal consistency coefficients.

From item analysis, it was determined that proposed sub-scales, e.g., achievement and affection, did not predict different outcomes, that "sub-scales" intercorrelated highly. Hence, items proposed to tap specific sub-areas were abandoned.

The scale was further reduced by eliminating items which (a) correlated highly with the Crowne-Marlowe Social Desirability Scale, (b) showed a non-significant relationship with other items, (c) showed a proportional split such that one response was chosen 85 percent of the time, or (d) had a near-zero correlation with item validity data provided by Rotter, Liverant, and Crowne (1961) and Seeman and Evans (1962). Result was a 29-item scale (including six filler items) which was considered to measure the subject's generalized, situation independent, expectancy of reinforcement.

Factor analytic studies designed to test the generalization of expectancy have produced conflicting results. This is not surprising considering the low comparability in such studies. Rotter (1966) reports two studies, one by Franklin in 1963, the other by himself,

which found a general factor accounting for most of the variance, 53 percent in the Franklin study, and several insignificant smaller factors. More recent investigations have revealed two factors, one consisting of items phrased in the first person and concerning belief in one's own control; the other is composed of items written in the third person which generally state that others have control (Gurin, Gurin, Lao, & Beattie, 1969; Mirels, 1970). These factors have been labeled personal control and control ideology, or control attribution. The former variable seems to measure expectancy, as Rotter defined it, while the latter is different. Personal control, however, consistently accounts for most of the variance.

The role of expectancy of control to modes of life adjustment is critical to this study for the generalized belief system is expected to have widespread effects on an individual's life. There is an expected positive relationship between internality and adjustment. Individuals who believe in their ability to obtain rewards from their efforts will pursue and, usually, gain success. On the other hand, a degree of externality is necessary for adequate life adjustment for some happenings are external to the person's control.

The extreme values in either direction are predicted to be associated with poor life adjustment. A very high internal score would typify individuals who place extreme demands upon themselves, some of which are unattainable because these demands are external to their realm of personal influence. These persons would probably experience high levels of guilt, self-degradation, and frustration in the face of failure. An extreme external stance may be obtained either from someone for whom the score is accurate vis-a-vis their behavioral style,

or from individuals who make the statements as a naive form of defensiveness. In the first example the externals have a passive resigned attitude toward environmental difficulties. In the latter case the external would protect self-esteem yet also prevent themselves from altering their behaviors. They fail to consider the type of feedback they had received from their failures and/or successes. Thus, either an extreme internal or an extreme external stance represents maladjustment; optimal adjustment reflects a degree of balance between internality and externality. The relationship between locus of control and adjustment appears to be curvilinear rather than linear, a prediction several studies have supported (Rotter, 1966).

In a work situation, vis-a-vis the Hackman and Oldham model, locus of control could have several effects. The most obvious effect would be the influence of extreme externality within the model. It is anticipated that this belief would interfere with the ability of the feedback core dimension to establish knowledge of results, that the extreme externals would not value autonomy or demonstrate high experienced responsibility. Hence, these persons would demonstrate low general job satisfaction and, possibly, internal work motivation even if GNS is high. These persons tend to project responsibility for failure onto others, so it is further suggested that their specific satisfaction with supervision will be low, that their self-esteem will be independent of their general job satisfaction or performance level.

Extreme internals, on the other hand, will probably demonstrate low self-esteem which is independent of job satisfaction. It might even show heightened experienced responsibility irrespective of the amount of autonomy present in the job. It is suggested that the

curvilinear nature of the relationship between generalized expectancy and adjustment must be considered when examining the Hackman and Oldham theory.

Job Involvement

Job involvement is a value orientation toward work in general which influences the extent to which individual self-esteem is influenced by work. Job involvement represents the internalization of social values. It is independent of the particular job being performed (Lodahl, 1964; Lodahl & Kejner, 1965). Job involved persons are those for whom work is an integral portion of life and for whom work is the primary source of self-esteem. Non-job involved persons, on the other hand, derive the core of their self-image from non-work sources; self-esteem is minimally influenced only by their work. Most of their living is motivated aside from the job.

Early literature is generally supportive of the concept of job involvement and its relationship to other variables. Wickert (1951) determined that telephone operators who quit their jobs were less ego involved with their work than those who remained on the job. Other investigators (Lewis, 1944; Lewis & Franklin, 1944) have reported that ego involvement with work results in greater attention being given to successes and higher levels of work group involvement.

Stability of job involvement over time and its factorial independence from factors such as satisfaction, motivation, and frustration are reported by Lodahl and Kejner (1965). Lodahl (1964) suggested that social influences at work are related to high job involvement. Rabinowitz, Hall, and Goodale (1977) report that job involvement is related to growth need strength, Protestant Work Ethic,

and job scope. It is further suggested that there is an interpersonal component to job involvement, that it is also a fairly stable individual difference which might moderate job satisfaction.

Initially, job involvement was included as a dependent variable in the Hackman and Lawler model, a position which is clearly contradictory to its theoretical and empirical definitions. This study suggests that job involvement be included as a moderating variable much as GNS and locus of control are included. It also suggests that persons may be high on GNS and low on job involvement, but still manage to achieve personal growth at work through social interaction.

Job Satisfaction in Nurses

A brief but representative review of the current literature on job satisfaction in nurses not only lends credence to the use of Hackman and Oldham's model in evaluating the phenomenon, but to the consideration of the other variables previously mentioned in this paper.

Historically, motivation for choosing nursing as a career has changed concurrently with social norm alterations concerning work (Cowden, 1978). Early nursing training had a religious heritage which emphasized self-sacrifice in the service of others as well as postponement of rewards for one's efforts until the afterlife. Training was conducted in a monastic environment where rigid rules and "character building" exercises were ever-present.

Contemporary nurses neither share their predecessors' rigid training experiences nor their attitudes toward work. Modern nurses, having been educated in an atmosphere more accessible to a variety of nursing and non-nursing experiences, are searching for a sense of personal worth from both work and non-work activities. No longer are

they willing to postpone gratification of many of their needs until the after-life. At least, self-interest is now on an equal basis with concern for others. Thus, today's nurses are more likely to seek social status, prestige, and other extrinsic rewards for their efforts. This is in addition to autonomy and the meaningfulness of their work for self and others. Because the nurses' selves have become more differentiated, the role of job involvement as an influential individual difference must be seriously considered. Further, the nurses' work design must be examined in light of its potential to satisfy these more acutely differentiated needs.

Several models or partial models for the phenomenon of job satisfaction in nurses have been proposed which, typically and in general, are in agreement with the Hackman and Oldham model for work. Kupst, Schulman, and Dowding (1979) developed one such model with a factor analytic methodology. Beliefs held by parents of pediatric patients relative to the quality of patient care provided in a large pediatric hospital were factor analyzed along with employee beliefs about relative job satisfaction. Results suggested that four factors were important to employee work satisfaction, that where these factors were high, the quality of patient care was also high. These factors were (a) intrinsic satisfactions derived from work (e.g., meaningfulness and personal growth), (b) satisfaction with institutional work-related policies, (c) satisfaction with supervision, and (d) presence of external satisfiers such as pay and fringe benefits.

Seybolt, Pavett, and Walker (1978) describe a model for job satisfaction in nurses which is based on Vroom's expectancy theory (1964); this model is similar to Hackman and Oldham's thesis. Tenets

of this model include the expectancy that a valued outcome may be obtained, and the belief that one's own efforts may be instrumental in attaining these goals. Since turnover and job satisfaction have been related (March & Simon, 1958), the authors examined voluntary turnover rates and satisfaction among 242 nurses vis-a-vis this model. They found that high turnover rates were typical of jobs in which instrumentality dimension was lower for both extrinsic rewards and growth needs. Influence of a generalized expectancy was not examined in this study so results add support only to the core job dimensions/work outcomes relationship.

Kruger's (1971) work suggests that discrepancy between expectations relative to the nature of nursing, fostered by training as opposed to the actual task, increases the impact of unmet expectancies. Usually nurses' utilization is not related to educational or skill levels vis-a-vis other nurses or other health care professionals. Discrepancies in expectations for prestige (Cowden, 1978), social status (Godfrey, 1978a), and compensation for efforts (Brief, 1976) relative to other health care professionals have been cited as sources of frustration.

Although Brief (1976) offers a model for job satisfaction in nurses he presents no empirical support. His theory suggests that job characteristics (a la Hackman and Oldham) plus individual differences among nurses, in terms of values and personality traits, interact to produce job satisfaction. This model also includes variables related to nurse's non-work life, e.g., family, as being potentially influential.

One specific variable which has received attention as influencing job satisfaction is the organization of the work in the ward. Three distinct organizations have been defined:

1. the utilitarian model assigns one nurse to one task to be applied to all patients;
2. the team approach assigns all tasks relating to a group of patients to a team of nurses within which tasks are then assigned which are usually rotated;
3. the primary care approach assigns a group of patients to a single nurse who is responsible for all tasks for these patients.

The above organizational methods differ in the amount of skill variety and autonomy that is present. According to Hackman and Oldham's theory, these would be expected to influence work outcomes for the nurse. Empirical data are mixed with some investigators who support this proposition (Kelley & Lambert, 1978; Theis & Harrington, 1968), while others (e.g., Strilaeff, 1978) found no evidence for its validity. When differences were found, positive consequences of increasing autonomy and variety through organization of work along team or primary care models, increased job satisfaction, decreased turnover, and higher quality patient care were included in the pattern.

Godfrey (1978a, 1978b, 1978c) conducted a survey of the nation's nurses in an attempt to identify causes for nursing job dissatisfaction. Although his methodology lacked scientific rigor and offered only simplistic descriptive results, the data base of over 17,000 nurses provides a wealth of information. The typical respondent was a young married female working in a health care facility. The questionnaire was distributed through a popular professional journal, so

the characteristics of this sample are probably biased. Almost all of the subjects were satisfied with nursing as a profession, but fewer (79 percent) were pleased with their specific job. Primary satisfiers included the opportunity to help others while performing a challenging job; sources of dissatisfaction included inefficient staff, lack of feedback from the supervisor, preponderance of non-care giving tasks, and understaffing. Also mentioned was the aversive influence of some of the nursing tasks. When asked to define the most important characteristics of their jobs the following were given: (a) opportunity for personal growth, (b) choice in scheduling, (c) salary, (d) nursing administration support, and (e) adequate staffing.

The exploration of the current status of the study of job satisfaction in nurses provides support for including the Hackman and Oldham theory as a conceptual framework for exploration of the problem.

It also suggests the influence of individual differences such as job involvement and locus of control, as well as the impact of job design variables and work environment factors.

Summary of the Literature

A description of the historical antecedents of contemporary research in job satisfaction were presented. Four major theories of job satisfaction were reviewed and criticisms of Hackman and Oldham's theory were delineated. Other potentially influential factors, job involvement and locus of control, were considered; literature on job satisfaction on nurses was explored for support in using Hackman and Oldham's theory as a conceptual framework for the problem, for support of this writer's criticisms of the theory, and for additional variables of interest in this investigation.

CHAPTER III METHODOLOGY

A perennial problem for the nursing profession is the existing high level of job turnover. Estimated rates of job turnover range from 35 to 60 percent, and suggested costs for replacing nurses who leave their jobs approach the \$2,000/nurse level (McCloskey, 1974; Tirney & Wright, 1973). Impact of this high attrition rate goes beyond financial costs, for it is also felt in the psychosocial sphere of nurses who leave their jobs. Three-fourths of the total number of nurses who leave their jobs or profession do so for voluntary reasons (Seybolt, Pavett, & Walker, 1978). A primary motivating force in their decision to quit seems to be dissatisfaction with the work of direct patient care nursing. Recognition of this problematic issue is not new. Both research and intervention efforts have been directed toward its resolution, with only modest success. This author proposes that the failure to significantly change the amount of voluntary job turnover among direct patient care nurses is due to an inadequate description and formulation of the dynamics of the phenomenon. It is toward this end that this study is directed.

The purpose of this research is to explore the work of nursing from the framework of the Hackman and Oldham (1975) job satisfaction model and to suggest amendments to their theory which might result in a more complete explication of the phenomenon.

The development of the model to be used in testing this research stems from examining literature in the areas of job satisfaction among

nurses and job satisfaction in general. Research in the former area suggests that factors involving both nurses and the nature of their work are potentially significant to understanding the reason some nurses become dissatisfied with their work.

Contemporary nurses differ radically from their early counterparts in beliefs and values relating to work, self-esteem, and self gratification (Cowden, 1978). Early nurses training was conducted in a monastic atmosphere. It was intricately associated with religious practices. Its trainees were steeped in the concepts of self-sacrifice in servicing others; in delay of gratification until the after-life. They were cloistered from experiences which might expose them to other possible alternative sources of self-worth. Modern nurses manifest diversity in their education and life experiences. They are likely to command a more highly differentiated system of beliefs and values than their professional predecessors. Self-interest has approached the level of concern for others. Factors which might satisfy concerns for self might include: status, financial reward, and personal growth, meaningfulness of work for others and self (Godfrey, 1978a, 1978b, 1978c; Kupst et al., 1979). Modern nurses are likely to see three potential ways of satisfying these interests: their worklife, their non-work life, or some combination thereof. This is in sharp contrast to the almost exclusive identification of self with the early nurses' work situation.

As nurses' values and beliefs have changed, so have the work dimensions to which they look for the satisfaction of their needs. In the past, merely helping the patient was sufficient compensation for services. Today's nurses are permitted to consider a variety of

factors which include: helping others (Kupst et al., 1979), a ward organization (Kelley & Lambert, 1978; Strilaeff, 1978; Theis & Harrington, 1968), pay and other remuneration (Kupst, et al., 1978; Seybolt, et al., 1978), prestige and professional recognition (Brief, 1976; Cowden, 1978; Godfrey, 1978a; Kruger, 1971), and supervisory relationship (Godfrey, 1978b). Some nurses may look for personal growth through the job. Seybolt et al. (1978) have suggested that the design of the job must be such that the nurses believe that a result of their efforts will culminate in their desired intrinsic or extrinsic rewards.

It is evident that being able to define the characteristics of nursing which influence nurse satisfaction with the job is very important. It is also clear that these characteristics cannot be made without considering individual differences in values, beliefs, and personality traits of the nurses who perform the jobs.

A major drawback to the study of job satisfaction among nurses has been the absence of a clearly defined theoretical framework which could serve as a foundation for beginning the exploration, or organizing and interpreting the data. Brief (1976) presented an outline for such a theory which included both work and individual difference variables; he suggested that such an approach was mandatory. He did not, however, provide an empirical test for his theory; he merely provided the theory as a suggested starting point. Therefore, this author turned to the general literature on job satisfaction for a theoretical foundation for this study.

Historically, there have been three trends in the exploration of job satisfaction. The last of these trends is known as the job

enrichment approach. This approach proposes that job characteristics may lead to personal growth in those who perform the work, if the workers possess certain values, beliefs, or personality traits; personal growth through work leads to job satisfaction. If task characteristics which most effectively promote personal growth can be identified, then jobs could be designed with these features in mind, and job satisfaction could be maximized. Hackman and Oldham (1975) have proposed one of the foremost theories within the job enrichment approach. It is their theory which will be used as a foundation for examining job satisfaction among nurses. Their model has been used extensively to diagnose the characteristics of a multitude of jobs, with moderate success.

Basically, Hackman and Oldham suggest that five core dimensions of a job (skill variety, task identity, task significance, autonomy, and feedback from the job itself) are the basic characteristics which promote personal growth in workers. Job satisfaction follows when workers achieve personal growth from their work. Relationship between core job characteristics and job satisfaction includes an intermediate step, the creation of three critical psychological states in the workers. These states are experienced meaningfulness of the work, experienced responsibility for the outcomes of the work, and knowledge of the actual results of the work activities. Experienced meaningfulness is produced by variety, identity, and significance, collectively, while experienced responsibility results from autonomy, and knowledge of results is determined by feedback from the job itself. In turn, the three psychological states collectively produce the personal and work outcomes from working on an enriched job: internal

work motivation, quality performance, general satisfaction with the work, and attendance/longevity.

As mentioned above, the Hackman and Oldham model also considers the influence of worker individual difference in relation to growth need strength. This factor is the degree to which the workers desire to have higher order needs satisfied, i.e., achieve personal growth. It is presumed to moderate the relationships in core job dimensions, critical psychological states, and personal and work outcomes. These relationships are depicted in Figure 1 and operate as follows:

1. If all core job dimensions responsible for the production of a critical psychological state are present in a high quantity, that psychological state will be produced in a high quantity.
2. If all three critical psychological states are present in high quantity, the workers will experience high internal work motivation, a high quality of work produced, high general satisfaction with the work, and low absenteeism and turnover, but only if
3. The workers are high on growth need strength.

This theory has met moderate success when it is used to define characteristics of a job which are responsible for producing personal growth in a worker, i.e., satisfying higher order needs. It will be used in this fashion to define the work of nurses.

Hackman and Oldham point out, however, that their definition of job satisfaction is incomplete. This writer suggests that this is due to two major difficulties in their theory.

1. It is too narrow in focus. It fails to consider the possible influence of several factors which have been reported by nurses as being important to their satisfaction with their jobs, but which are

not related to personal growth: pay, supervision, interpersonal relationships, organizational practices, and other lower order need satisfiers.

2. This theory includes several proposed relationships within the factors (particularly with respect to the concept of individual differences) that have alternative explanations not yet eliminated. This study provides a more complete description of the phenomenon of nurse job satisfaction. Although the Hackman and Oldham job enrichment model of job satisfaction is used as the primary conceptual framework for the study, additional factors and relationships are considered within these factors in order to increase model's breadth and predictive ability.

The remainder of this chapter includes a discussion of the methods used in this study. The hypotheses are stated and are followed with procedures used for selection of the sample which includes a description of the subject pool characteristics. Next, the assessment instruments that were used are described. Methods of collecting data and handling scores follow. Finally, statistical methods through which data were analyzed and hypotheses were tested are described.

Hypotheses

The hypotheses of this study stem from research questions presented in Chapter I. They are supported by the review of the literature presented in Chapter II, and are presented below. Each one is preceded by a brief summary of the considerations which lead to its inception.

Individual differences. A basic assumption of the Hackman and Oldham model is that all persons do not possess a desire for higher order need satisfaction, i.e., growth need strength, that differences in individuals in this dimension can be used to explain differences in affective responses to their jobs, i.e., job satisfaction. Specifically, persons with high growth need strength will achieve personal growth and increased self-esteem through working on an enriched job, i.e., one which is high on all five job core dimensions. The outcome of personal growth and increased self-esteem is job satisfaction. Jobs which are low in job core dimensions will not produce job satisfaction in persons high in growth need strength. Persons low in growth need strength will not respond favorably to jobs high in job core dimensions. In both instances, levels of personal growth and self-esteem in workers are low.

These relationships are based on the assumption that all persons do not desire personal growth, yet this author has previously shown that this tenet is contradicted by empiricists (e.g., Rogers, 1961), theorists (e.g., Maslow, 1970), and the data of Hackman and Oldham. In order to fully understand the relationship between job characteristics and worker affective reactions to them, this writer proposes that other individual differences should be considered. Two such differences which have been suggested are job involvement and beliefs about locus of control.

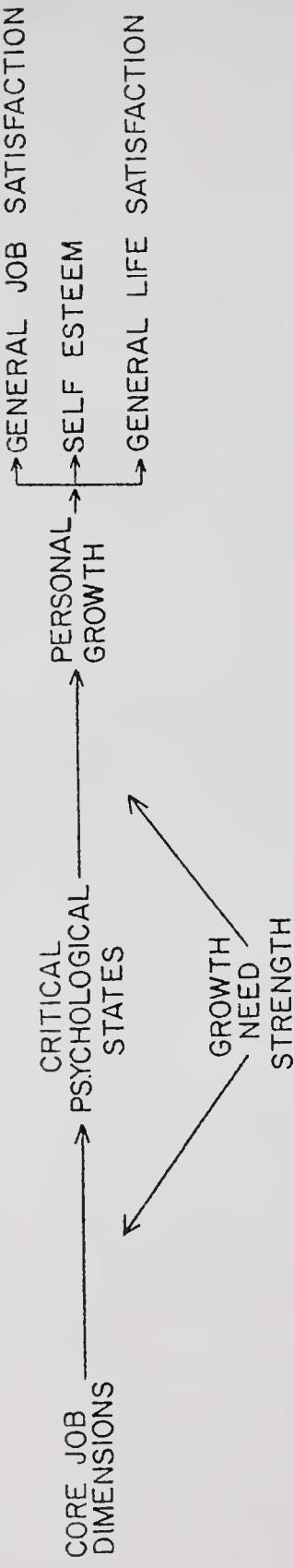
Job involvement is the degree to which individual self-esteem derives from work. According to Hackman and Oldham, the satisfaction of higher order needs, i.e., personal growth, through work leads to increased self-esteem and job satisfaction. If a job is designed to

promote personal growth, then those who are not job satisfied are not desirous of personal growth. It is suggested that all persons desire personal growth, yet may differ as to whether or not they seek to achieve it through work or non-work activities. Thus, all nurses will possess high levels of growth need strength, yet they will differ on levels of job involvement. This difference will influence their affective work responses. If nurses are achieving personal growth, then their level of general life satisfaction should depend upon their level of job involvement (Figure 2).

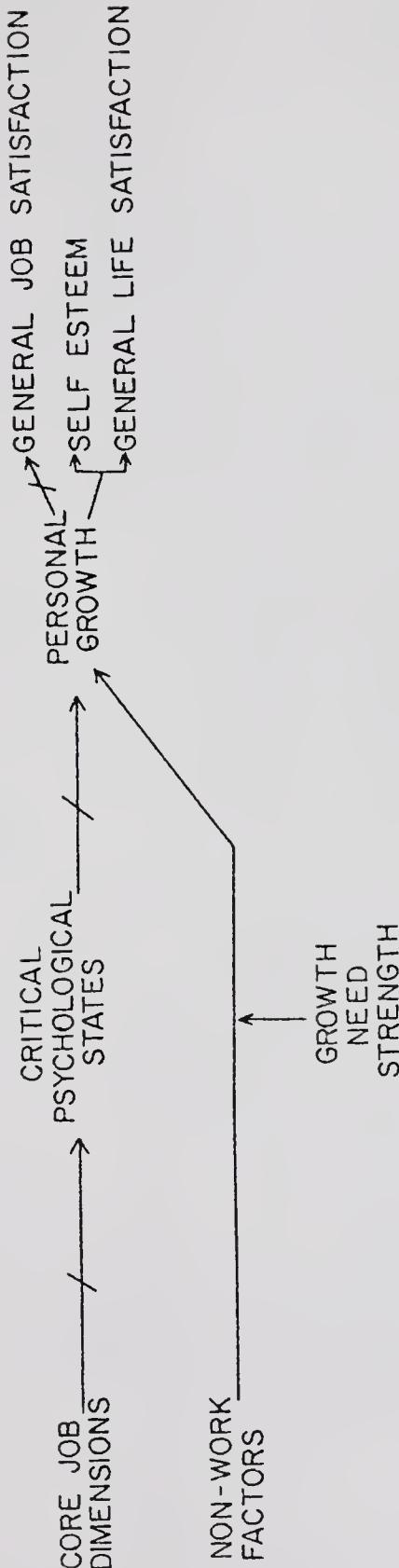
Hypothesis 1: Nurses who are low on job involvement and high on growth need strength and general life satisfaction will have the following characteristics: (a) high self-esteem, and (b) low job satisfaction.

Hackman and Oldham state that the amount of autonomy designed in a job will influence the degree to which the workers experience responsibility for the outcomes of their efforts. Workers who experience a high level of responsibility for the consequence of their work efforts and who are also high on growth need strength will achieve personal growth, thus, job satisfaction.

Data offered by Hackman and Oldham have failed to support this proposed relationship. Thus, this writer suggests that this is because of the choice of growth need strength as the individual difference in moderating the relationship. Hackman and Oldham have



The Relationships Among the Core Job Dimensions, the Critical Psychological States, and the Affective Response to Work for High Job Involved Nurses



The Relationships Among the Core Job Dimensions, the Critical Psychological States, Non-Work Factors, and the Affective Responses to Work and Non-Work Factors for Low Job Involved Nurses

Figure 2

demonstrated that perceptual differences influence worker responses to work. It is suggested that workers' general beliefs about locus of control as well as autonomy in their jobs will influence their experienced responsibility for work outcomes. Individuals who hold to extreme beliefs in either the internal or external direction will fail to accurately appreciate the contingent relationship between their efforts and the consequences of their efforts (Figure 3).

Hypothesis 2: Nurses with an extreme belief about locus of control will demonstrate one of the following levels of experienced responsibility for the outcomes of their work: (a) very low responsibility if they are very external in their beliefs, and (b) very high responsibility if they are very internal in their beliefs.

Interpersonal influences. Relationships between the core job dimension of feedback from the job itself and the critical psychological state of knowledge of the actual results of work activities is not as strong as was predicted by Hackman and Oldham. This writer suggests that interpersonal interaction is an important means in gaining feedback about one's work performance. The Job Diagnostic Survey measures two interpersonal dimensions of a job, feedback from agents and dealing with others. The former is the extent of feedback the workers receive directly from supervisors or co-workers about their performance. Feedback from agents was intended to be used to supplement information provided by feedback from the job itself, although it has not been used for this purpose; nor do Hackman and Oldham offer an

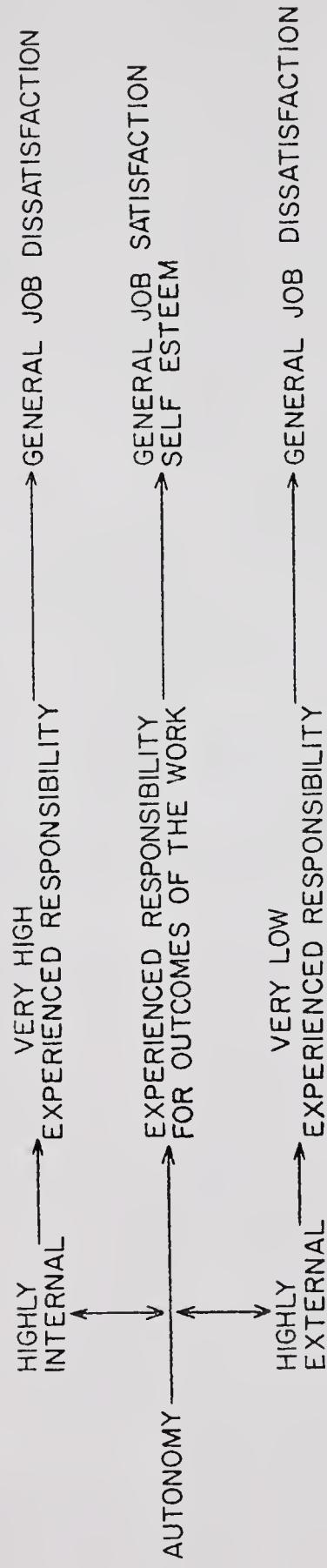


Figure 3

The Relationships among Autonomy, Locus of Control, Experienced Responsibility for Outcomes of the Work, and Affective Reactions to the Work

explanation for the omission. Dealing with others is a measure of the extent to which the job requires workers to interact with other people either within or outside of the work setting. This writer suggests that any interaction with others while engaged in the activities of the work role will increase worker self-awareness as workers, which would likely include self perceptions of competency. The factor, dealing with others, would also appear to influence knowledge of the actual results of work activities. However, its relationship to this critical psychological state is not specified by Hackman and Oldham (Figure 4).

Hypothesis 3: Information about the interpersonal means of achieving feedback about one's work (feedback from agents and/or dealing with others) plus feedback from the work itself will better predict the nurses' knowledge of the actual results of their work activities than will feedback from the work itself, alone.

Lower order needs. Nurses expect the satisfaction of lower order needs from a job. Knowledge of the extent to which the job satisfies these needs will help to predict the degree of overall job satisfaction. The Hackman and Oldham model considers only the influence of higher order need satisfaction in its prediction of general job satisfaction, although the Job Diagnostic Survey measures the degree of satisfaction with pay, security, supervision, and co-workers.

Hypothesis 4: Information about the degree to which a job satisfies lower order needs will be helpful in predicting the nurses' general satisfaction with the job.

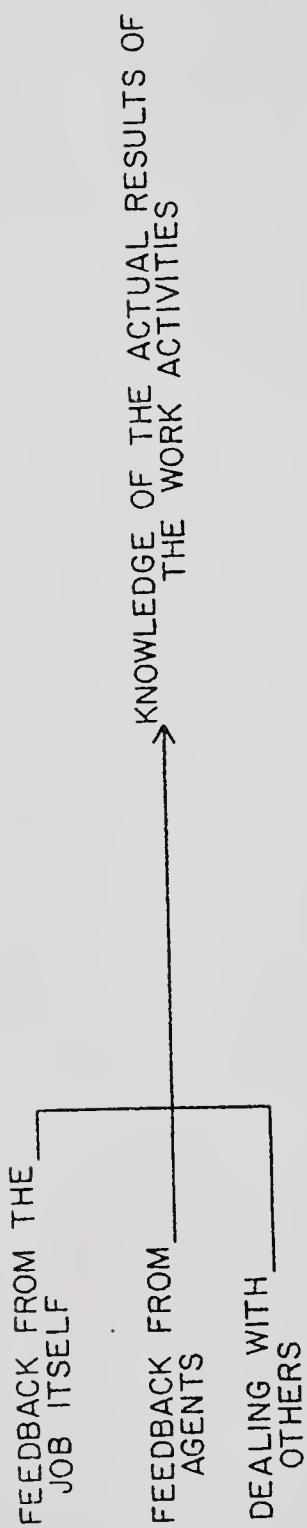


Figure 4

Using Three Variables to Predict the Critical Psychological State - Knowledge of results

Skill variety. Hackman and Oldham assume that the greater the quantity of skill variety that is designed into a job the greater will be the experienced meaningfulness and general satisfaction experienced by workers. This assumption is partially founded in the tenets of activation theory which suggests that moderate levels of stimulation are necessary in order to prevent boredom. It also suggests that overstimulation will produce an unpleasant response. Nurses are sometimes required to work under conditions that are highly stressful and aversive which might be construed as a special type of high skill variety in the job. It is hypothesized that stress and/or aversiveness, as subtypes of skill variety that were not considered by the Hackman and Oldham model, will overload workers and create dissatisfaction rather than satisfaction. Such would be especially true if the level of skill variety was high to begin with.

Hypothesis 5: High skill variety nursing jobs which are high on stress and/or aversiveness will produce a low level of experienced meaningfulness and general satisfaction.

The mathematical model. Hackman and Oldham have failed to present evidence that their multiplicative, disjunctive model for predicting general job satisfaction is superior to other models. This may be due to the fact that the multiplicative model does not consider the attenuation of the reliabilities of individual sub-scales that is caused by the process of multiplication. In light of this difficulty and additional variables that are considered to be of potential importance in this study, an additive regression model is being proposed as a means of predicting job satisfaction with more accuracy than the original model.

Hypothesis 6: An additive, multiple regression equation, employing all of Hackman's predictors plus those factors suggested to be influential by the testing of Hypotheses 1 - 5 in this study will better predict general job satisfaction than will Hackman and Oldham's multiplicative model.

Turnover. It has been shown that job satisfaction is related to job turnover. It is suggested that the regression equation found to be more successful in the testing of Hypothesis 6 will also be able to predict the nurses' perceived propensity to leave their jobs.

Hypothesis 7: The factors which influence the nurse's levels of job satisfaction may also be used to predict their perceived propensity to leave their jobs.

Subjects

The subject sample was drawn from the pool of nurses employed by the Bethel Deaconess Hospital in Newton, Kansas. This facility is a comprehensive community hospital associated with the Mennonite Church. Employees, however, come from the general population of the area, and they represent a variety of religious orientations. Bethel Deaconess employs about 60 registered nurses (RN) and 25 licensed practical nurses (LPN) of which 45 and 20, respectively, work in direct patient care positions. This institution has a history of moderate nurse turnover; poor results have followed intervention attempts. Both of these facts are expressed concerns of the hospital and nursing administration.

All female nurses (RN and LPN) performing direct patient care nursing were asked to participate in the study. Male nurses were excluded because their number was too minimal to allow statistical

investigation of the influence of gender in relation to the phenomena in question. Participation included completing the assessment packet which was composed of instruments described later in this chapter.

The packets were distributed by this investigator to the nurses working on each of the work units in the hospital during the meetings which occur during the change of shift procedure. The purpose of the study was explained and questions were answered. The nurses were asked to identify themselves by their hospital employee number. It was made clear that this information was strictly voluntary. Each subject was given an envelope in which she could return her completed questionnaire. No identifying information was placed on the envelope. Later, the sealed envelopes were collected by the head nurse for each work unit. The head nurse marked the nurse's name on the unit roster as having returned the completed questionnaire or as having declined to participate in the study. This procedure allowed the head nurse to monitor the return and to prompt those who were somewhat slow without violating the confidentiality of the subject's responses to the questionnaires. All of the sealed envelopes were sent to the Director of Nursing who passed them on to the investigator. The confidentiality of the subjects was protected in this step in the procedure because the investigator did not have access to the list which identifies hospital employees by their employee number.

Fifty questionnaires were submitted to 34 RN's and 16 LPN's, of which 36 (72%) were returned. Ten of these questionnaires were incompletely or inaccurately filled out. The investigator was able to identify six of these subjects with their work units and employee numbers but not with their names. Each incomplete portion of each

questionnaire was placed in a sealed envelope bearing the employee's unit name and identification number. These envelopes were then sent to the Director of Nursing. The Director was able to identify the names of the nurses by their employee numbers and she forwarded the sealed envelope to the individual. The questionnaires were completed correctly and returned to the investigator in unmarked sealed envelopes.

Demographic Data Description

The demographic characteristics of the sample are presented in Table 1. All subjects were white females and worked as nurses in one of four work units in the hospital. The operating room-recovery room unit provided the fewest number of subjects, although 100% of that unit's contingent responded to the study. Almost half of the nurses worked on the day shift; the evening and night shifts had fewer respondents. This would appear to be consistent with the staffing patterns of the hospital, as the number of nurses assigned to a shift decreased from the day shift through the night shift. Two thirds of the subjects were full-time employees (40 hour week); none of them worked less than 10 hours per week.

Eighty-one percent of the nurses were married; their ages were evenly distributed from 18 to 65. Seven of the nurses were licensed practical nurses (LPN); of the remaining 29 registered nurses (RN) 79% received their training from a diploma granting program. Over half of the sample completed their training fifteen or more years before the

Table 1
Demographic Characteristics of the Sample

Characteristic	%	Characteristic	%
Unit		42-49	19
Obstetrics	28	50-57	19
Medical-Pediatrics	19	58-65	13
Operating Room-		Training	
Recovery Room	14	Licensed practical nurse	19
Surgery-ICCU	33	Diploma, RN	64
?	6	Associates degree, RN	6
Shift		Bachelors degree, RN	11
Day	47	Years Since Training was	
Evening	31	Completed	
Night	19	Less than or equal to 5	14
?	3	6-10	17
Hours Worked/Week		11-15	14
10-39	36	Greater than 15	55
40	64	Years in Present Position	
Marital Status		Less than 1	8
Not Married	19	1-2	19
Married	81	3-5	28
Age		6-10	8
18-25	8	11-15	17
26-33	22	Greater than 15	20
34-41	19		

Table 1-Continued

Characteristic	%
<hr/>	
Number of Nursing Positions	
Held in Past Five Years	
1	53
2	31
Greater than 2	16
Years Working as a Nurse	
Less than 1	3
1-2	6
3-5	14
6-10	8
11-15	25
Greater than 15	44

study; 37% had held the same position for at least 11 years. The sample was about evenly split on the question of having changed jobs in the past five years (47%), or not having done so (53%). Finally, the sample included a high percentage (69%) of nurses who had been working for at least 11 years as compared to the 9% with less than three years' experience.

In summary, an adequate number of subjects was obtained in order to satisfy the requirements of the statistical tests employed in the data analysis. Subjects represent all work units and work shifts within the hospital. They demonstrate diversity in age, educational level, and number of hours worked per week. The sample appears to be fairly stable with respect to employment, with over one-third of the subjects having held the same position for at least 11 years. A substantial 47%, however, had changed jobs in the previous five years. This suggests a sufficient degree of variability in the dimension of job stability. Finally, the sample is characterized by a moderate level of vocational stability and career orientation, with 69% of the subjects reporting that they had worked in nursing for at least eleven years. Simple subtraction suggests that 32% of the sample, while vocationally stable, had changed jobs during their career. They might provide information relevant to job dissatisfaction.

Instruments

The Job Diagnostic Survey

Efforts to intervene against job dissatisfaction by altering job characteristics have met with minimal success. One explanation offered for this difficulty is an inability to accurately assess the extent to which various job dimensions affect satisfaction with work and the

effects on the workers of altering these dimensions. The Job Diagnostic Survey (JDS) was developed by Hackman and Oldham (1974) as a means of improving the measurement of these dimensions.

The test is a paper-and-pencil instrument which takes about thirty minutes to administer. It is composed of fourteen scales: task variety, task identity, task significance, autonomy, feedback from the job itself, feedback from agents, dealing with others, experienced meaningfulness of the work, experienced responsibility for work outcomes, knowledge of results, general satisfaction, internal work motivation, specific satisfactions, and individual growth need strength. The relationships among these variables have been discussed previously; the JDS is described below. All variables are measured with a seven-point Likert scale except for the "job choice" method of assessing individual growth need strength. This section uses a five-point scale which is converted to a seven-point scale during scoring.

Job dimensions. Each job dimension is measured by a single item in Section 1, and by two items in Section 2 of the JDS. In the first instance, the item asks the subjects to assess the amount of that characteristic present in their jobs; in Section 2 both items describe the job in terms of the dimension in question and the respondents are asked to assess the accuracy of that statement's description of their jobs. One item is written in a positive format the other is written in negative format.

Critical psychological states. The three critical psychological states (experienced meaningfulness, experienced responsibility, knowledge of results) are assessed in Sections 3 and 5 of the JDS. In the first section, subjects are asked to indicate their agreement

with statements about their work experiences. In Section 5, a projective format is used in which respondents are asked to think of other people in their organization who hold the same job that they do and to assess how accurately the statements would reflect those persons' feelings about their work. Fourteen items are used to measure these states with eight written in a positive format and six written in a negative format.

Affective reactions: general satisfaction and internal work motivation. These two variables are also measured by items in Sections 3 and 5. There are five items for general satisfaction, six for internal work motivation.

Affective reactions: specific satisfactions. These variables are measured by fourteen items in Section 4 of the JDS. The subjects are asked to indicate their degree of satisfaction with each specific job variable (pay, supervision, social relations, security).

Individual growth need strength. Individual growth need strength is measured in Section 6 by eleven items in a "would like" format, in Section 7 by twelve items in a "job choice" format. In the former, subjects are asked to indicate how much they would like to have the stated characteristic present in their jobs. Five of the items are not related to GNS, nor are they scored.

In Section 7, GNS is measured by having subjects indicate their preference for pairs of hypothetical jobs. A job which has characteristics that are relevant to growth need satisfaction is paired with a job possessing characteristics that are not relevant to this factor. One-half of the choices is between jobs with positive characteristics; the other half is between jobs with negative features. The growth relevant job is presented first in half of the twelve items.

Technical development. The JDS was developed simultaneously with the underlying theory. Its theoretical history has been covered previously in this paper. The following discusses its technical development.

Hackman and Oldham (1974) revised and refined the work of Turner and Lawrence (1965) and Hackman and Lawler (1971) over a two-year period. They also developed the Job Diagnostic Survey. While many of the items and scales from the previous research were retained to form a foundation for the JDS, they were revised in consideration of several guidelines. First, the instrument was to be theory specific, i.e., it was to provide measures of each of the variables that were considered to be important to the underlying theory. A few variables that were not considered by the theory were added but, in general, the instrument sacrifices breadth of assessment for depth within each of the theory specified factors.

Second, to provide reliability of measurement, items devoted to each factor were written in two formats. They are found in two different sections of the instrument. Also, the Job Rating Form was developed to provide an additional frame of reference for assessment of job core characteristics. This instrument parallels the JDS. It is completed by individuals who do not perform the task but are in a position to observe it, e.g., supervisors.

Finally, efforts were made to clearly distinguish between task characteristics and employee affective reactions by carefully choosing item formats and language. The intent was to increase objectivity of subject descriptions of job characteristics.

Hackman and Oldham relate that the JDS underwent three major revisions during its development, although details of this process are reported for the second revision only. During this stage, in addition to adhering to the three guidelines stated above, the investigators revised items to increase scale reliability and interscale discrimination. They also used data collected to assess conceptual validity of the instrument and to revise the theory upon which it is based.

Empirical properties of the JDS are reported by Oldham, Hackman, and Stepina (1978) and Hackman and Oldham (1975). The former study reflects data gathered from 6,930 employees working in 876 jobs in 56 organizations. It is the compilation of findings of numerous studies conducted by many different persons for various reasons. The latter represents data gathered in the second stage of the revision process. Reliability and validity data are presented below; normative data are presented in Table 2.

Reliability. Internal consistency reliabilities for JDS scales range from .88 to .58 (Oldham et al., 1978). While these values are lower than desirable, it should be pointed out that the JDS is not intended for diagnosis of a single individual job. When the average score of several employees working on a job is used these reliabilities become more than adequate.

Validity. Validity of this instrument has been supported by Hackman and Oldham (1975) and Katz (1978) in three ways. The former study has been previously described (Chapter II) and will be briefly summarized here. As a measure of the discriminant validity of each of the variables, the median diagonal correlation was calculated for each of them. This correlation is the median correlation of items on

a scale, e.g., task identity, with all items of the same type scored on different scales, e.g., other core job dimensions. These values ranged from .12 for task identity to .28 for growth satisfaction and indicate satisfactory discriminant validity for items in each scale.

The same data were used to explore predictive validity of the instrument, vis-a-vis the underlying theory. Findings indicated that the variables measured by the JDS relate to one another as specified by the theory. Specifically, job characteristics and motivating potential score were positively and substantially related to the three critical psychological states and the work outcomes. In addition, each of these relationships was stronger for individuals who were high in growth need strength.

Evidence that the factor structure is as predicted by the theory is offered by Katz (1978) who factor analyzed responses to the JDS over 3,000 subjects. Results demonstrate five factors for job dimensions each with appropriately loaded items.

In general, the JDS has satisfactory psychometric properties and variables which it measures relate as indicated by the theory upon which it is founded. Evidence of its reliability and validity have been offered.

Job Rating Form

The Job Rating Form is used by supervisors or other non-incumbents of a job to describe only job dimensions of a task. This instrument, which is identical to Sections One and Two of the JDS, is scored in the same way. It also allows the researcher to investigate worker objectivity in describing jobs by providing an external frame of reference for comparison.

Internal-External Locus of Control Scale

The Internal-External Locus of Control Scale (I-E Scale) is a product of the exploration of individual differences in beliefs about locus of control (Rotter, 1966). The scale includes twenty-nine forced choice items in which responses indicating an external orientation are paired with internal responses. Subjects are awarded one point for each item answered in the external direction; high scores indicate externality. The maximum score is 23 because six of the items are fillers intended to disguise the intent of the test. The I-E scale is available in one form and it is suitable for subjects with high school reading ability.

The theory underlying this scale, as well as its course of development, were described earlier in this paper. A discussion of the psychometric properties of the instrument follows.

Reliability. Reliability data for this scale are available from several sources. Rotter (1966), using a sample of 400 college students, reports internal consistency coefficients ranging from .65 to .79. The Franklin study reported earlier (Rotter, 1966) supported these estimates by using a national stratified sample of 1,000 senior high school students from whose responses an internal consistency coefficient of .69 was calculated. These values are only moderately high, yet they are probably underestimates since the intent of the items is to tap expectancies in a variety of situations. They are, therefore, heterogeneous.

Test-retest reliabilities are reported by Rotter (1966) on college students cited above. After one month, the coefficient was .72 (males, $r = .60$; females, $r = .83$); after two months the coefficient

was .55 (males, $r = .49$; females, $r = .61$). Rotter suggests that the drop after two months may be due partially to differences in administration (individual vs. group) techniques between the two administration times.

Validity. Extensive reviews of the literature on the use of the Rotter I-E scale are available (Joe, 1971; Lefcourt, 1966, Minton, 1967). In support of convergent validity of the scale, these reviews indicate that there are individual differences in perception of control over one's fate, that the I-E scale is sensitive to these differences.

Discriminant validity data for this scale are adequate, although not as adequate as that originally proposed by Rotter. A significant problem has been the failure of the I-E scale to consistently discriminate between locus of control and social desirability. Several early studies of correlations of the I-E scale with the Crowne-Marlowe Social Desirability Scale ranged from -.41 to -.12, with a median of -.22. Rotter (1966) proposes that the wide range might, in part, be due to demand characteristics of the test situation, e.g., one sample was composed of recently incarcerated prisoners being evaluated for prison placement. It yielded a correlation of -.41. More recent studies have shown equally high correlations with the Crowne-Marlowe (Altrocchi, Palmer, Hellman, & Davis, 1968; Hjelle, 1971) ranging from -.20 to -.42, and correlations with the Edwards Social Desirability Scales on the order of -.23 to -.70 (Berzins, Ross, & Cohen, 1970; Cone, 1971). These correlations are somewhat higher than desirable. They suggest that an internal locus of control is more socially desirable and that the test taker's responses may be biased in this direction. Most tests are affected by this bias, however. It is expected that the anonymity

provided subjects of this study alleviated some of this difficulty.

The scale discriminates from other constructs more effectively.

Correlations with variables such as intelligence and gender (Rotter, 1966) have typically been nonsignificant. Relationships between locus of control and life adjustment have also been explored. Theoretically, one would expect a positive relationship between internality and adjustment in our culture. However, if good adjustment implies success at living, then one must assume there will be an interaction between adjustment and expectancy of control. For example, internals who experience many failures can blame only themselves, while externals may use their beliefs as a defense against recognizing responsibility for failure. Hence, extreme internals might make excessive demands of self, might become easily depressed, while the extreme external would ignore obvious difficulties with self. The relationship between expectancy and adjustment would be curvilinear rather than linear. Rotter (1966) presents data from several studies using the Rotter Incomplete Sentences Blank and the Taylor Manifest Anxiety Scale. Both support the hypothesis of a nonlinear relationship between adjustment and expectancy of control.

Finally, studies on the relationship between locus of control and race have typically suggested that blacks are more external than whites. However, some investigators (e.g., Battle & Rotter, 1963; Lefcourt & Ladwig, 1965) have gathered evidence that this may be a function of social class rather than of race; higher socio-economic groups tend to be more internal.

Evidence of construct validity of the scale is presented in two multi-method studies. Adams-Weber (Rotter, 1966) compared the score

on the I-E scale to scores on a story completion test designed to measure subjects' beliefs that negative consequences which befell the central character were due either to their moral transgressions or to external sources. Subjects were divided according to number of external endings provided for the story and their scores on the I-E scale. Analysis of variance indicated a significant different between the groups, suggesting that externals see punishment as being externally imposed while internals believe it follows moral transgressions.

In the second study reported by Rotter, Cardi correlated I-E scale scores with assessments of expectancy of control independently determined by judges from data gathered in an interview situation. For the twenty-five subjects used in the study, a point biserial correlation of .61 ($p < .002$) was obtained. These two studies demonstrated that scores on the I-E scale converge with findings of other methods of measuring this phenomenon. They also strengthen support of the construct validity of locus of control and convergent validity of the scale.

Normative data. Normative data is provided by Rotter (1966) and McDonald (1976) for a total of 4,433 subjects in a variety of studies. The means for all groups by sex are: males = 8.2 (SD = 4.0); females = 8.5 (SD = 3.9); male and female combined = 8.3 (SD = 3.9).

In summary, the I-E scale shows a moderate level of internal consistency which is adequate when one considers that the scale measures a generalized expectancy over a variety of situations. The scale is stable over time despite its sensitivity to demand characteristics of a test situation. Relationships with other variables, such as gender, race, and intelligence, are low. This represents good

discriminant validity. Possible correlations with social class are of minimum concern to this study because nurses are typically homogeneous in this trait. Evidence of convergent validity is provided by multi-method studies which also support the construct validity of the scale when they are considered in light of the discriminant validity data. Factor analytic studies show the scale not to be as pure as Rotter proposed it to be. It includes two factors, personal control and control ideology. The former accounts for most of the variance in the scale which is in line with Rotter's definition of locus of control. In general the test appears to be an adequate measure of the construct.

Job Involvement Scale

The Job Involvement Scale was developed by Lodahl and Kejner (1965) to assess the extent to which persons are identified psychologically with their work, i.e., the importance of work in relation to their total self-image. The current scale may be used in two forms: the 20-item regular form, or the six-item version which is appropriate when testing time is limited. The 20-item scale is used in this study. Each item is set in a four-point Likert scale format. Subjects' responses to items 10, 13, 14, 16, 17, 18, and 19 are reversed for scoring, i.e., a 4 becomes a 1, etc. Their scores are the sum of their responses to all 20 items. Low scores indicate low job involvement.

Development. Both versions of the scale are end products of a lengthy and thorough test development process. The initial step was the compilation, from a variety of sources, of 110 statements potentially related to job involvement. Duplicate items were eliminated; the eighty remaining items were submitted to a panel of trained expert

judges who rated each statement according to the degree of job involvement represented. The forty items which were retained had low Q score values and medians were near the ends of the distribution. These items were then placed in a four-point Likert scale format (1 = strongly agree; 4 = strongly disagree), randomly ordered, and administered to 137 nurses in a large general hospital. Total scores were determined and the data were intercorrelated and factor analyzed using the method of principal axes and a varimax rotation.

From these procedures, a general factor accounting for 22 percent of the communality was obtained. The total job involvement score accounted for 91 percent of the variance of this general factor and showed a loading of .96 thereon. From the total of eleven factors obtained with eigenvalues greater than 1.00, seven (which had loadings greater than .30 and which consisted of more than two variables) were selected to be rotated separately. A total of 77 percent of the communality was accounted for by these seven factors. The results of their rotation were as follows.

Factors VI and VII had almost zero loading on total job involvement score; they were discarded.

Factor I represented an indifferent response to work that might be made by persons with unmet initial high work expectations. The first response to the frustration of these hopes is alienation which then changes into indifference. There is a concomitant shift in the role of work from a satisfier in and of itself to a means of satisfying other needs.

Factor II was described as an expression of hyperinvolvement with work which is not usually endorsed in our culture. Total job involvement loaded highest on this factor.

Factor III items expressed high involvement with and a high sense of duty toward work. These items possessed strong face validity for the concept.

Factor IV described a negative involvement, i.e., a sense of guilt because of unfinished work, and a tendency to avoid going to work.

The final factor dealt with pride in the organization, ambition, and desire for upward mobility.

Total job involvement loaded on the five factors as follows: I, -.43; II, -.58; III, .38; IV, -.37; and V, .36. These loadings accounted for 92 percent of the variance of total involvement and, as such, may be considered as the dimensions of job involvement for nursing personnel.

The scale was further reduced to 20 items after consideration of the correlations between total score and an item score, the communality of each item, and the factorial clarity of the item. The final twenty-item scale included six items from both scales 1 and 2, five items from scale 3, and three items from scale 4.

In order to examine the generalizability of the scale to occupations other than nursing, the revised 20-item scale was administered to a group of engineers ($n = 70$). Nurse protocols were rescored using these same 20 items and were used as a comparison group. An uncorrected part-whole correlation between the two sets of nursing data was computed ($r = .88$) which indicated some loss due to item reduction but satisfactory agreement.

Data from the 20-item scale and total job involvement score for both engineers and nurses were inter-correlated and factor analyzed. Results indicated a low inter-item correlation and a high item-total

score correlation for both groups. Most of the variance of the total involvement score was found on the first rotated principal axis, with loadings of .99 for nurses and .96 for engineers on this factor. This is indicative of a general involvement factor across all twenty items. Six of the items had their highest loadings on this factor for both groups. These items constitute the previously mentioned short form of the scale.

Rotation of the axes produced four factors for each group, with three factors interpretable for nurses and four interpretable for engineers. The first three factors appeared to be similar in content for the two samples except the loadings had opposite signs on Factors II and III. Factor I for both samples was the same as Factor II from the 40-item analysis. This is a rejection of items endorsing a hypernormal job involvement. As before, this factor had the highest loading for the total job involvement score. Factor II was the same as Factor I in the previous study, namely, an indifferent response to work. Factor III was the same as in the previous study, namely, a duty-bound obligation to work and an assumption that self-worth is measured by work. For engineers, Factor IV seemed to deal with boredom.

Normative data. Lodahl and Kejner (1965) present means and standard deviations for three groups of subjects responding to the 20-item scale. These data were as follows: nurses, $N = 137$, $M = 43.37$, $SD = 6.52$; engineers, $N = 70$, $M = 42.62$, $SD = 7.83$; graduate students, $M = 48.06$, $SD = 9.56$. No means for the six-item scale were presented.

Reliability. For the 20-item scale, product moment correlation coefficients were calculated by Lodahl and Kejner for three samples

in order to determine the split half reliability with odd-even numbers as the split. The coefficients were corrected with the Spearman-Brown formula. They were as follows: nurses, $r = .72$; engineers, $r = .80$; graduate students, $r = .89$.

Items on the six-item version of the scale (3, 6, 8, 11, 15, 18) were rescored as a single scale for engineers and nurses. A corrected split half reliability coefficient of .73 was then determined. The six-item scale correlated .87 with the 20 item-scale and it accounted for 76 percent of the variance in the 20-item total. Use of this brief version would be appropriate when testing time is limited.

Validity. There are five sources of validity data for this scale. The first is the result of an exploration of the scale's ability to discriminate among groups. It consists of an analysis of variance on data obtained from nurses, engineers, and students. Findings indicate that students have significantly lower job involvement with the job of student than do either nurses or engineers; this result is expected and supports the scale's discriminant validity.

The remaining four studies examined the extent to which the job involvement score correlated with other variables. For the initial sample of 137 nurses the total job involvement score was correlated with a variety of demographic variables. The only significant relationship was with age. Considering the shift in social values over the history of nursing training, this finding would be expected.

In an effort to more accurately define leadership behavior in head nurses Anderson (1964) collected data on a variety of variables. A negative relationship was found between job involvement and a preference for nursing activities over administration, and a negative relationship with consideration for others.

Similar results were obtained with the previously mentioned sample of graduate students. A positive relationship between job involvement and supervisory qualities was found. This suggests that job involved persons are seen as good supervisors by their supervisors.

Finally, in the study of engineers (Lodahl & Kejner, 1965), fifty variables concerned with the work situation were intercorrelated and factor analyzed. Total job involvement score correlated positively with number of people contacted daily, with interdependence of the work, with perceived technical proficiency of the supervisor, with perceived opportunity for promotions in the future, with satisfactions with promotion, supervision, people, and the work itself. From factor analysis, it was concluded that job satisfaction and job involvement share some of the same determinants but are not identical constructs.

The following conclusions can be drawn: (a) job involvement is a multidimensional construct that can be scaled with adequate but not high reliability; (b) scale items are generalizable over several populations in that they demonstrate the same factor structure; (c) the scale discriminates adequately among groups and correlates plausibly with other variables.

Janis-Field Feelings of Inadequacy Scale

Subject's level of self-esteem was measured by the Janis-Field Feelings of Inadequacy Scale (Hovland & Janis, 1959) which has been revised by Eagly (1967). This 20-item instrument is set in a five-point Likert scale format, has been balanced for response bias, and is directed toward assessing social self-esteem in particular. Subject's score is the sum of responses to positively stated items plus the sum of reversed responses to negatively stated items. A high

score indicates high self-esteem. No information on the construction of the scale is available. No item analyses have been conducted and criterion for item selection appears to be face validity.

Reliability. Eagly (1967, 1969) reports split-half reliabilities of .72 and .88 and a correlation of .54 between positively and negatively stated items. The original 23-item version of the scale has a split-half reliability of .83 (Skolnick & Shaw, 1970).

Validity. Convergent validity data indicate that the original scale correlates .67 with the California Psychological Inventory self-esteem scale and .60 with self-ratings of self-esteem. Low correlations with self-ratings of dominance and open-mindedness indicate some discriminant validity (Hamilton, 1971). Greenbaum (1966) also found a correlation of only .35 with the Crowne-Marlow Social Disability Scale. Finally, Hamilton (1971) found correlations of .24, .27, and -.09 with peer ratings of self-esteem, dominance, and open-mindedness, respectively. These data offer some support for predictive validity and suggest that there is something beyond a halo effect being assessed.

Summary. Statistical properties of this scale are weak, yet in relation to other scales purported to assess self-esteem, well over one hundred (Wylie, 1961), it is one of the best. Assessment in this area has followed the direction of the generation of new scales rather than the exploration of the strengths of scales already in use. The Janis-Field scale is one of the most widely used. It, at least, has some general reliability data available. The Tennessee Self Concept Scale (Fitts, 1964) has stronger credentials, but it is not appropriate because of administrative time limitations.

Assessment of Satisfaction with Life in General

Satisfaction with life in general was measured by this single item: In general, how satisfying do you find the way you're spending your life these days? Would you call it (circle one) Not very satisfying, Pretty satisfying, or Completely satisfying? The subject received 0 points for endorsing the first response, 1 point for the second, and 2 points for the last.

Reliability. This item was included in a survey of how Americans use their time (Robinson, 1977). It was administered to 1,244 adults living in non-rural homes in which at least one member was under age 65 and held a regular non-farm job. Subjects indicated that 24 percent were Completely satisfied, 65 percent were Pretty satisfied, and 11 percent were Not Very satisfied with the way they were living their lives.

These results are consistently replicated in other studies, thus they provide a sense of the generalizability of the item. The same question was used three years later (1968) by the same researcher as part of a post-election attitude poll. The subject sample was selected to accurately reflect characteristics of the U.S. population. Results are almost identical with those in the initial study. Only a one percent shift of responses from the Not Very to Pretty category was evident.

Two earlier studies have employed a single-item, three-alternative measure of the subject's happiness. Robinson (1977) has shown that this correlates adequately with the satisfaction question cited above. Feld (Robinson & Shaver, 1976) administered the item to each subject as part of an hour-long interview dealing with adjustment to and

problems with work, family, and social relations. The sample was drawn by probability methods. They included 2,460 adult subjects representative of the U.S. population. Results indicated that 35 percent of the subjects considered themselves as Very happy, 54 percent Pretty happy, and 11 percent Not Too happy.

Bradburn and Caplovitz (1965) examined the self-report of happiness in four towns with populations between three and ten thousand. Two of the towns were defined as economically depressed. The question was administered to 2,000 adults who represented a cross section of the communities. Again, results are consistent with other studies: 24 percent endorsed Very happy, 59 percent endorsed Pretty happy, and 17 percent endorsed Not Too happy.

In summary, these two single-item measures of general happiness and satisfaction have shown consistent findings over a long period of time, and might, at least, be considered reliable measures of some phenomenon.

Several studies of the test-retest reliability of these questions have been conducted. Robinson (1977) reports a correlation of .59 between reports of satisfaction over a four-to-six-month period. Bradburn and Caplovitz (1965) report a Kendall's tau of .43 between administrations of the happiness question eight months apart. Finally, Wilson (1967) reports two studies of the test-retest correlations of the happiness question with values of .70 (one month interval) and .67 (two year interval). Short-and long-term correlations are adequate; they are higher than intermediate time span reliabilities, although none is exceedingly high. Based on these findings, and the apparent stability of the phenomenon in the general population, one

might conclude that a reported level of personal happiness is a fairly stable characteristic over extended periods of time. Yet it may fluctuate over shorter periods, i.e., it may be influenced by a variety of factors.

Validity. There is one example of the predictive validity of these items that is available. In the Bradburn and Caplovitz (1965) study it was hypothesized that economic conditions would affect a person's happiness with life. When responses from subjects living in economically depressed towns were omitted, the percentage of responses in the Not Very happy category dropped from 17 percent to 13 percent. Such a shift would be expected if the question measured a person's happiness accurately and if, as Robinson (1977) has demonstrated, income is positively related to a general life satisfaction.

Summary. The single item measure of satisfaction with life generally shows adequate reliability. Results of assessment using this item are consistent with expected results that are based upon a theoretical understanding of happiness; this supports its predictive validity.

Demographic and Other Variables

The demographic variables measured are found in Appendix A. The items are fill in the blank or Likert format. Most of the data was used to characterize the sample with respect to JDS normative data. But, some of the items are variables suggested in the literature as possibly influencing job satisfaction, job involvement, or locus of control.

Stress and aversiveness of environment. Subjects responded to two alternatives for assessing negative impact of work environments.

They were asked to rank order nursing work units within the hospital in terms of the amount of stress that is inherent in the work environment (Appendix B). The second measure, aversiveness of nursing work, looks to Godfrey's work (1978a). He surveyed 17,000 nurses and developed a list of the most pleasant and unpleasant tasks which a nurse must perform (Appendix C). Subjects were asked to indicate (using a seven-point Likert scale) the average number of times per day that they must perform each task.

Propensity to leave. Propensity of a nurse to leave employment was determined by asking two questions: (1) Do you have serious intentions to leave this hospital soon? (2) Not counting retirement, if you have your own way, will you be working for this hospital one year from now? These questions were used by Seybolt, Pavett, and Walker (1978) in a study of job turnover among nurses. The authors found that nurses who stated a higher propensity to leave had a higher rate of turnover one year later ($p < .001$).

Data Analysis

Data were analyzed along several dimensions. Means and standard deviations for all variables were computed, as were intercorrelations among variables. A comparison was then made with available normative data. Specific hypotheses were tested as is indicated below. A summary of instruments and analysis methods is found in Appendices D and E.

Hypothesis 1. Nurses who are low on job involvement and high on growth need strength and general life satisfaction will have the following characteristics: (a) high self-esteem and (b) low job satisfaction.

All nurses who responded to the general life satisfaction item with pretty (2) or completely (3) were assumed to be experiencing some current degree of personal growth; they were used in this analysis. A cross product was determined for job involvement and growth need strength; one was also calculated for self-esteem and job satisfaction. A correlation between the two cross products was then calculated. This correlation was corrected for the attenuation of the reliabilities of the individual test instruments caused by the multiplication process.

Hypothesis 2. Nurses with an extreme belief about locus of control will demonstrate one of the following levels of experienced responsibility for the outcomes of their work: (a) very low responsibility if they are very external in their beliefs, or (b) very high responsibility if they are very internal in their beliefs.

Nurses' scores on the Rotter I-E scale were trichotomized. Those in the upper third were defined as highly external; those in the lower third were defined as highly internal. Within each of the two groups of subjects the autonomy dimension of the job was correlated with experienced responsibility for work outcomes. Significance of difference between correlations of the two groups was then calculated.

Hypothesis 3. Information about the interpersonal means of achieving feedback about one's work (feedback from agents and/or dealing with others) plus feedback from the work itself will better predict the nurses' knowledge of the actual results of their work activities than will feedback from the work itself, alone.

Variables feedback from the job itself, dealing with others, and feedback from agents were used as predictors in a stepwise multiple regression equation to predict subjects' knowledge of actual results

of their work activities. Beta values and R^2 's were examined at each step.

Stepwise regression is a multiple regression technique in which independent variables are entered into the prediction equation one at a time; the order of entry is determined by the relative amount of variance in the dependent variable for which each one of them accounts. Each time a variable is entered into the equation is defined as a "step." The process of entering variables stops when none of the remaining independent variables accounts for additional variance at a predetermined level of significance. The level of significance for the stepwise procedures used in this study was $p < .05$.

Hypothesis 4. Information about the degree to which a job satisfies lower order needs will be helpful in predicting nurses' general satisfaction with the job.

General job satisfaction was predicted from the motivating potential score by using a simple regression equation. Subjects' responses to lower order needs items on the JDS were then added to the equation in a stepwise fashion. Beta values and R^2 's were examined at each step.

Hypothesis 5. High skill variety nursing jobs which are high on stress and/or aversiveness will produce a low level of experienced meaningfulness and, thus, a low level of job satisfaction.

Nurses whose jobs were at or above a score of 4 on skill variety were trichotomized on amount of aversiveness present in their jobs. Correlations between skill variety and experienced

meaningfulness were computed for the extreme groups and significance of difference between the two was determined.

This process was repeated for the sample after trichotomizing subjects on amount of stress present in the work environment.

Hypothesis 6. An additive multiple regression equation employing all of Hackman and Oldham's predictors plus those variables suggested to be influential by the testing of Hypotheses 1-5 in this study will better predict general job satisfaction than will Hackman and Oldham's multiplicative model.

Hypothesis 6 was tested in four steps:

1. Job satisfaction was predicted from the MPS (the multiplicative, disjunctive model) using a linear regression model.
2. Job satisfaction was predicted from core characteristics using a linear regression model (the additive model).
3. Job satisfaction was predicted from the MPS, aversiveness, job involvement, lower order need satisfactions, and growth satisfaction (the complete, multiplicative model).
4. Step 3 was repeated but core characteristics were substituted for the MPS (the complete, additive model).

Hypothesis 7. The factors which influence the nurses' levels of job satisfaction may also be used to predict their perceived propensity to leave their jobs.

The equation found to be more effective in predicting general job satisfaction (Hypothesis 6) was to be used to predict the subjects' responses to the two propensity to leave items.

Summary

The nursing profession has been plagued with a high rate of job turnover. Some nurses only change jobs while others leave the profession completely. But, the results are the same in either instance: nursing personnel shortages, disruption of health care, staggering recruitment costs, and an immeasurable impact on the socio-psychological life system of nurses. Seybolt et al. (1978) suggested that some of this turnover is due to intrinsic factors, i.e., forces within the work setting which cause job dissatisfaction. Investigators have examined nursing job turnover from several models of job satisfaction. But, success has been microscopic when the results of these investigations were used to intervene against job turnover.

This investigator suggested that this lack of success might be because some theories of job satisfaction are too general to adequately consider the nuances of nursing work and/or are too specific to embrace the breadth of factors which impinge upon nurses in their daily tasks. It was also suggested that some of these theories have problems within their theoretical assumptions which limit their usefulness for describing the phenomenon of job satisfaction for any vocational group.

The purpose of this study was an attempt to adequately describe the phenomenon of nursing job satisfaction. The investigator chose as a theoretical foundation for the study the model for job satisfaction proposed by Hackman and Oldham (1975). This model has been widely used in investigating dynamics of job satisfaction in a multitude of vocations. The theory states that the degree of satisfaction with a job is a function of the extent to which actual work performed possesses five characteristics which promote worker personal

growth and the extent to which the worker desires personal growth.

This theory was examined to determine whether it included both breadth and depth necessary to be applicable to the work of nursing, and to determine whether it was founded on any questionable theoretical assumptions. The hypotheses of this study followed from this examination of Hackman and Oldham's theory. They are stated at the beginning of Chapter III. It was proposed that the investigation of these hypotheses would add valuable information regarding the nature of nursing job satisfaction which might be used to intervene against the high rate of job turnover in this profession.

CHAPTER IV RESULTS

This chapter presents the results of the investigation. It begins with a description of the statistical properties of data obtained from subjects and continues with information relative to objectivity of nurses' descriptions of job characteristics. Relationships among variables are described and, finally, the results of the hypothesis testing are presented.

JDS Means

Table 2 presents the means of the JDS scores gathered from this sample and normative values derived from 6,930 workers in private industries (Hackman & Oldham, 1974). Each of the scales (except for growth need strength [total] and MPS) is measured on a seven-point Likert scale; high values indicate a high amount of the characteristic being measured. GNS (total) is the sum of two seven-point scales; it ranges from 2 to 14; MPS is explained in Note b in the table.

Table 2 also presents results of t-tests for differences in values between nurses and professionals (n=72) working in industry and between nurses and all industry workers. The industry professional group is a subset of the industry worker group and is composed of a variety of vocations including nursing (Hackman & Oldham, 1974).

Table 2
Means, Standard Deviations and Tests of Difference of
Job Diagnostic Survey Scale Scores For
Current Subjects and Two Reference Groups

Scale ^a	Current Study		Industry Professionals ^b		Industry Workers ^c		Current Sample vs Current Sample		Private Industry Professionals ^f		Private Industry Workers ^g		
	1	2	1	2	3	1	2	3	1	2	3	1	2
Skill Variety	5.23	1.18	5.36	1.00	4.53	1.57			-.65			14.86*	
Task Identity	4.19	1.04	5.06	1.16	4.65	1.44			-3.88*			-10.65*	
Task Significance	6.44	.71	5.62	.95	5.49	1.25			4.65*			25.33*	
Autonomy	5.15	1.16	5.35	1.05	4.78	1.39			-.92			8.87*	
Feedback from the Job	5.27	.84	5.08	1.11	4.81	1.34			.90			11.44*	
Feedback from Agents	3.67	1.43	4.21	1.37	4.06	1.58			-1.94			-8.23*	
Dealing with Others	6.29	.90	5.83	.96	5.46	1.31			2.45*			28.82*	
Experienced Meaningfulness	5.91	.39	5.40	.87	5.10	1.14			3.40*			23.68*	
Experienced Responsibility	5.91	.50	5.75	.72	5.40	.96			1.21			17.71*	

Table 2-continued

Scale ^a	Current Study		Industry Professionals ^b		Industry Workers ^c		Industry Professionals ^f		Current Sample vs Private Industry Professionals ^g		Current Sample vs Private Industry Workers ^g	
	1	2	2	3	3	3	3	3	4	4	4	4
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s	t	t	t	t
Knowledge of Results	5.10	.87	5.00	.99	5.04	1.14	.51		1.75			
Internal Work Motivation	6.01	.45	5.77	.65	5.50	.89	2.03*		19.10*			
General Job Satisfaction	5.21	.80	4.88	.99	4.65	1.27	1.77		14.70*			
Growth Satisfaction	5.49	.80	5.06	1.09	4.74	1.33	2.15*		18.80*			
Pay Satisfaction	4.86	1.33	4.40	1.51	4.16	1.66	1.59		14.06*			
Security Satisfaction	5.78	1.17	4.96	1.16	4.76	1.48	3.53*		22.97*			
Social Satisfaction	5.77	.55	5.48	.85	5.31	1.02	1.91		15.18*			
Supervisory Satisfaction	4.98	1.19	4.89	1.29	4.79	1.57	.36		4.03*			
Motivating Potential Score ^d	145.40	50.79	153.66	55.21	122.10	69.41	-.77		6.46*			
Growth Need Strength (Would Like)	5.64	1.25	6.11	.82	5.64	1.22	-2.40*		0.00			

Table 2-continued

Scale ^a	Current Study 1	Industry Professionals ^b 2	Industry Workers ^c 3	Current Sample vs Private Industry Profes- sionals ^f Workers ^g
	\bar{x}	\bar{x}	\bar{x}	t
Growth Need Strength				
(Job Choice)	2.91	.42	4.76	.64
Growth Need Strength				
(Total) ^e	8.56	1.45	11.18	.57
N	36	72	6,930	

^aUnless otherwise noted the possible range for a score is from 1 to 7. A high score indicates a high quality of the variable measured by the scale.

^bProfessionals working in private industry (Hackman & Oldham, 1974). This is a subset of the sample represented in column 3.

^cWorkers in private industry from several studies from which the responses were pooled (Hackman & Oldham, 1974).

Table 2-continued

^dThe possible range is 1 to 343 with a high score indicating a worker's perception of the job as being high on the core job dimensions.

$$MPS = \frac{\text{Skill Variety} + \text{Task Identity} + \text{Task Significance}}{3} \times \text{Autonomy} \times \text{Feedback}$$

^eThe possible range is 2 to 14. High scores suggest that the respondent has a strong desire for higher order need satisfaction.

^f106 degrees of freedom.

^g6,964 degrees of freedom.

* p < .05, two tailed test.

Nurses in this sample diverge from industry professionals in several ways. This would be expected in light of the nature of their work. They described their jobs as being significantly lower on task identity than do the industry professionals. Nursing involves some procedures which have a clearly delineated beginning and end, but the process of caregiving is usually much more ambiguous. The product of nursing is not seen until the patient is discharged in a healthy state. Although patients are usually discharged healthier than when they were admitted, typically, hospital patients suffer from chronic illnesses for which there is no ultimate cure. Consequently, the day to day goal of nursing work (increasing health) is not the ideal goal (curing illness). Therefore, the product of nursing is somewhat ambiguous and subjective; this is in contrast to the private industry professional whose projects have more definite endpoints.

Nurses also see their work as being significantly higher in task significance (the degree to which their work has an impact on others). This was also true for the characteristic, dealing with others. Patients and their welfare are the object of nurse work. These results were expected.

Hackman and Oldham's (1975) theory proposes that experienced meaningfulness is a function of skill variety, task identity, and task significance. These nurses described themselves as developing significantly more of this psychological state from their jobs than do industry professionals. This is surprising because they describe their jobs as being about the same as industry professionals in skill variety, but significantly lower in task identity (Table 2). Hackman and Oldham's multiplicative disjunctive model states that the actual psychological

state will be induced in the worker at a high level only if all core dimensions which are related to that state are present in high quantities. Such was not the case in this study with respect to experienced meaningfulness. This result calls into question the multiplicative disjunctive model.

The nurses also describe themselves as experiencing higher internal work motivation and growth satisfaction than do industry professionals. No explanation for such a result is readily apparent. But it is particularly interesting, in light of the three measures of growth need strength. In each instance, subjects describe themselves as having significantly less desire for higher order need satisfaction than do industry professionals, yet they experienced higher levels of two reactions to their work which are theoretically related to GNS. (The concept of GNS has been problematic for Hackman and Oldham in the past, and it continues to be so in this study.)

Finally, nurses relate a significantly higher level of satisfaction with security than do industry professionals. It was pointed out that nurses in this sample were fairly stable vocationally, which is probably reflected in the high level of security they experience.

Nursing is sophisticated work when it is compared to most industry jobs. This is clear when the nurse's JDS scores are compared to those of all workers in private industry. Nurses describe their jobs as having significantly less task identity and feedback from agents than do industry workers. This is probably related to the ambiguity of the "finished product" of nursing and to the relative independence with which they perform their work. Almost all differences are significant.

This is probably a function of the extremely large N and degrees of freedom. In this circumstance, one must decide which differences not only are statistically significant but are also psychologically meaningful. In general, it appears that results indicate that nursing is more sophisticated than industry jobs, that nurses experience more positive responses to their job than do industry workers. This would be predicted from Hackman and Oldham's proposal that high core dimensions result in positive affective response.

Means for most of the JDS scales in this study were well above the expected midpoint of 4, so values were examined for skewness and kurtosis. There were two purposes behind this investigation: first, if some of the variables were not normally distributed, then, when possible, non-parametric statistics would be used in the data analysis; second, this investigator suggested that CNS, i.e., the desire for personal growth, was typical of all persons; it would be expected to show a negative skew and a positive kurtosis. Table 3 presents the results of this investigation (absolute values greater than 1.00 indicate non-normal distribution). It is apparent that many of these values are not distributed normally--a fact which has two implications. First, when feasible, non-parametric statistics should be used for analysis of these variables. Second, growth need strength (total) is skewed to the right and positively peaked. This suggests that subjects in this sample are, to a great degree, desirous of personal growth. This is consistent with findings

Table 3
Tests for Skewness and Kurtosis

Variable	Skewness	Kurtosis	Variable	Skewness	Kurtosis
Skill Variety	-0.94	0.57	Security Satisfaction	-1.38	3.50
Task Identity	-0.14	-0.99	Social Satisfaction	-1.04	2.05
Task Significance	-1.30	0.80	Supervisory Satisfaction	-0.88	-0.28
Autonomy	-0.73	-0.59	Growth Satisfaction	-1.26	1.56
Feedback from the Job	-0.11	-1.33	Growth Need Strength (Would Like)	-1.16	1.12
Feedback from Agents	0.21	-0.61	Growth Need Strength (Job Choice)	0.25	-0.16
Dealing with Others	-1.24	0.61	Growth Need Strength (total)	-1.09	1.14
Experienced Meaningfulness	-1.37	2.21	Job Involvement	-0.06	0.33
Experienced Responsibility	-0.79	0.25	Locus of Control	0.46	0.20
Knowledge of Results	-0.28	-0.63	Aversiveness	0.15	0.76
Internal Work Motivation	-0.52	-0.46	Stress	0.01	-1.71
Motivating Potential Score	0.16	-1.17	Perceived Stress	-0.28	-1.40
Job Satisfaction	-0.62	-0.26	Self Satisfaction	-0.19	-0.02
Pay Satisfaction	-0.87	-0.41	Life Satisfaction	0.72	6.19

Note: Absolute values greater than or equal to 1.00 indicate non-normal distribution.

of previous studies (e.g., Oldham et al. 1978). Also, Hackman and Oldham's proposition that all persons do not desire personal growth (i.e., it is not a normally distributed individual difference), is again called into question. This researcher has suggested that all persons do desire personal growth; therefore, GNS is inadequate for use as an individual difference variable which explains differential worker responses to work characteristics.

Non-Demographic Data Description

The means and tests of normality were determined for the non-demographic, non-JDS variables. They are found in Tables 3 and 4. Subjects appear to be slightly more job involved and internal in their locus of control than do subjects in normative groups, but the difference is not significant. Subjects were near the middle of the possible range for each of the other scores and, with the exception of general life satisfaction, all scores were normally distributed. For life satisfaction, scores showed little variability; one subject indicated that she was Not Very satisfied with her life; two subjects described themselves as Very satisfied; the others chose the Pretty satisfied alternative.

There was also little variability in responses to the propensity to leave item. Only one nurse indicated that she was intending to leave her job in either the near or distant future. She stated that her leaving would be due to childbirth, rather than to dissatisfaction with the job.

Table 4
Means, Norms, and Tests of Difference
for Non-Demographic Variables

Variable	Possible Range	Actual Range	Mean	Norm	z (df)	Low Score Indicates
Locus of Control	0;23	2;18	7.78	8.3 ^a	.80 (4468df) ^c	internal locus of control
Job Involvement	20;80	37;62	48.97	43.37 ^b	1.67 (171df) ^c	low job involvement
Self-Esteem	20;100	41;81	64.33	none		low self-esteem
Life Satisfaction	1;3	1;3	2.03	none		low life satisfaction
Aversiveness	11;77	28;47	36.53	none		low aversiveness

^a (McDonald, 1976; Rotter, 1966) N = 4,433; SD = 3.9.

^b (Lodahl & Kejner, 1965) for 137 nurses; SD = 6.52.

^cNot significant at .05 level, two tailed test.

The stress variable was developed by asking nurses to rank order their work units in terms of amount of stress they believed to be present in the work. The rank order of the units (from least to greatest stress) is as follows (4 = greatest stress): (1) obstetrics, (2) medical-pediatrics, (3) operating room-recovery room, and (4) surgery-ICCU. This ranking was expected for it is consistent with "common sense" notions about each one of them. The aversiveness inherent in work of nurses (defined as the frequency of the presence of aversive tasks and the absence of pleasant tasks) was distributed normally across the subjects.

In summary, these nurses tend to be slightly more internal in their locus of control than most persons. They are also slightly more job involved than most nurses. They are distributed normally in self-satisfaction. In overall satisfaction, very few report their lives as more or less than average. The work units are ranked in the expected direction according to the stress inherent in the work in the unit. Nursing jobs were distributed normally according to the amount of aversiveness present.

Objectivity of the Core Dimensions

The next step in data analysis was exploration of the degree to which nurse description of jobs agreed with descriptions of jobs which were provided by outside job observers (nursing supervisors). This investigator assumed that such a comparison would provide information relative to objectivity with which nurses perceived their jobs. (This procedure was used by Hackman and Oldham [1974, 1975].)

In order to accomplish this goal, supervisory nurses were asked to evaluate characteristics of nursing tasks on their own units by using

the Job Rating Form. Supervisors' assessments of job core dimensions were first compared for significant differences with the LPNs', then with the RNs'. When RNs' and LPNs' descriptions were compared, no evidence of significant differences between the two groups was evident. They were then collapsed into the category "staff nurse." Finally, staff nurses and supervisors were compared. Test statistics were Student's t or the Kruskal-Wallis test, depending upon distribution characteristics of the variable in question. Results of this analysis are summarized in Tables 5 and 6.

The tables show only two areas of disagreement. Supervisors estimated that the amount of skill variety present in work of LPN's was at a significantly higher level than did the LPN's estimate it. RN's rated their jobs as having significantly more feedback from agents than did the LPN's. Only hypothetical logic can be called upon to hypothesize as to which group was less accurate in appraisal of amount of skill variety and feedback from agents in LPN's work. LPN's do perform less complex and more routine tasks than to RN's, a fact supervisors failed to appreciate. Hackman and Oldham (1975) reported similar differences between amount of feedback perceived by workers and supervisors in a job. It would seem that feedback from agents relative to performance does not filter down to LPN's to the extent that supervisors believe it does. Agreement as to characteristics of work as assessed by workers and supervisors adds support to the assumption that nurses described their work objectively.

Table 5
Mean Job Dimension Scores
for RN's, LPN's, RN + LPN, and Supervisors

Job Dimension	RN			LPN			RN + LPN			Supervisor \bar{x} s
	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	s	\bar{x}	
Skill Variety	5.38	1.08	4.62	1.03	5.23	1.09	6.00	.82		
Task Identity	4.17	1.09	4.29	1.28	4.19	1.11	4.00	1.41		
Task Significance	6.47	.68	6.33	.84	6.44	.70	6.50	.58		
Autonomy	5.08	1.30	5.43	.50	5.15	1.19	5.58	.83		
Feedback from the Job	5.30	.81	5.14	1.03	5.27	.85	4.83	1.17		
Feedback from Agents	3.45	1.18	4.57	1.77	3.67	1.36	3.50	1.11		
Dealing with Others	6.38	.92	5.90	.69	6.29	.89	6.42	.69		
Motivating										
Potential Score	144.57	47.91	148.86	64.47	145.40	50.51	153.36	70.91		
N		29		7		36		4		

Table 6
Comparison of Mean Job
Dimension Scores Among RN's, LPN's, RN + LPN, and
Supervisors

Job Dimension	RN vs LPN			RN vs Supervisors			LPN vs Supervisors			RN + LPN vs Supervisors		
	t	df	t	df	t	df	t	df	t	df	t	df
Skill Variety	-1.69	34	-1.10	31	-2.29*	9	-1.35	38				
Task Identity	.24	34	.29	31	.34	9	.32	38				
Task Significance	-.46	34	-.08	31	-.35	9	-.15	38				
Autonomy	.69	34	-.75	31	-.39	9	-.71	38				
Feedback from the Job	-.43	34	1.02	31	.46	9	.94	38				
Feedback from Agents	2.05*	34	-.08	31	1.08	9	.24	38				
Dealing with Others	-1.28	34	-.08	31	-1.19	9	-.28	38				
Motivating Potential												
Score	.20	34	-.33	31	-.11	9	-.29	38				

* p < .05, two tailed test

Correlations

Intercorrelations of the JDS scales are presented first. Correlations between the JDS scales and the non-demographic scales follow.

As a rule, correlations in core dimensions (Table 7) are lower than those reported previously (Oldham et al., 1978). Task identity correlates negatively ($r = -.38$, $p < .05$) with skill variety; this might be peculiar to nursing. Nursing positions which require the greatest degree of skill variety are located in intensive care, coronary care, surgical and recovery units. These units are the initial step in the patient's progress toward health, so nurses rarely see the end product of their work. Too, they work with each patient for only a short period of time.

Correlations between task identity and other core dimensions are all in line with previously reported values. But, two core dimensions do not correlate significantly with the MPS. This might be due to the fact that both are negatively skewed and that they indicated little variability.

Relationships between core dimensions and critical psychological states are shown in Table 8. Experienced responsibility and knowledge of results correlate significantly with experienced meaningfulness, yet they,

Table 7
Intercorrelations Among the Core Dimensions

Core Dimension	Skill Variety	Task Identity	Task Significance	Autonomy	Feedback from the Job	Feedback from the MPS
Skill Variety	--					
Task Identity	-.38*	--				
Task Significance	.09	.11	--			
Autonomy	.09	.24	.06	--		
Feedback from the Job	.16	.28	.16	.19	--	
Motivating Potential Score	.17	.49*	.27	.79*	.62*	--

* $p < .05$, two tailed test

Table 8
Correlations of the Core Dimensions Among Themselves
and with the Critical Psychological States

	Critical Psychological States		
	Experienced Meaningfulness	Experienced Responsibility	Knowledge of Results
Experienced Meaningfulness	----		
Experienced Responsibility	.33*	----	
Knowledge of Results	.35*	.11	----
Skill Variety	.22	.43*	-.11
Task Identity	.30	.01	.54*
Task Significance	.26	.04	.12
Autonomy	.04	.16	.01
Feedback from the Job	.33*	.19	.52*
Motivating Potential Score	.26	.21	.35

* $p < .05$, two tailed test

themselves, indicate a weak relationship. This is consistent with previously reported data (Oldham et al., 1978), although values in this study are somewhat lower.

As expected, skill variety, task identity, and task significance all correlated with experienced meaningfulness, but the correlation was not significant. Autonomy is most strongly related to experienced responsibility. Knowledge of results is significantly correlated with feedback and task identity. One might expect that the more clearly the job is delineated the more likely would the nurses be aware of outcomes of work efforts. In general, relationships are as expected, but not as strong as desired.

Table 9 presents relationships between critical psychological states and work outcomes. According to Hackman and Oldham, the three states should relate positively and strongly with job satisfaction, internal work motivation, and growth satisfaction, but not so strongly with lower order need satisfaction. Pay satisfaction and security satisfaction follow this thesis; the other two lower order need satisfactions do not.

It would appear that the relationship between nurse and supervisor is strongly and positively related to all three critical psychological states. Nurse-coworker social relationship is strongly related to meaningfulness of the work, as well as to knowledge of results gained by the nurse. This investigation has predicted that nurses would gain knowledge about

Table 9
 Correlations of the Critical Psychological
 States With the Work Outcomes

Work Outcomes	Critical Psychological States		
	Experienced Meaningfulness	Experienced Responsibility	Knowledge of Results
Job Satisfaction	.44*	.04	.29
Internal Work Motivation	.45*	.59*	.23
Growth Satisfaction	.19	.19	.07
Social Satisfaction	.42*	.22	.54*
Supervisory Satisfaction	.33*	.33*	.39*
Pay Satisfaction	.15	.30	.18
Security Satisfaction	-.01	.13	.10

*p < .05, two tailed test.

their work effectiveness by working with other people. This prediction is tested later. Relationships among job satisfaction, internal motivation, and growth satisfaction are consistent with the theory and data reported previously (Oldham et al., 1978); an exception is the almost nonexistent relationship between experienced responsibility and job satisfaction. This relationship, however, has been problematic in previous research (Hackman & Oldham, 1974, 1975).

The Job Diagnostic Survey also measures growth need strength (GNS) and two variables which have no specified position in the Hackman and Oldham theory, feedback from agents and dealing with others. In Table 10, correlations between these variables and remaining JDS scales are shown.

GNS is independent of the other scales, with the exception of internal work motivation. GNS is hypothesized as being a moderating variable and, as such, is expected to be independent. Feedback from agents is significantly and positively correlated with task identity, feedback from the job, the MPS, knowledge of results, social satisfaction, and supervisory satisfaction. These relationships point to the connection between working with others (supervisors and co-workers) and gaining appreciation for outcomes of work efforts. This might be especially true in jobs whose outcomes are ambiguous (e.g., nursing). Hackman and Oldham, unlike the socio-technical theorists (e.g., Herbst, 1962, 1974, 1976), have minimized the importance of interpersonal relationships on the job.

Table 10
 Correlations of the Additional JDS Scales Among
 Themselves and With the Primary JDS Scales

	Additional Job Diagnostic Survey Scales			
	Feed-back from Agents	Dealing with Others	GNS (Would Like)	GNS (Job Choice)
Feedback from Agents	--			
Dealing with Others	.11	--		
GNS (Would Like Format)	.14	.10	--	
GNS (Job Choice Format)	.02	-.12	.41*	--
GNS (total)	.14	.13	.93*	.69*
Skill Variety	.04	.13	.16	.12
Task Identity	.38*	-.10	.09	.01
Task Significance	.09	.28	-.15	-.11
Autonomy	.14	-.48*	.04	.10
Feedback from the Job	.34*	.16	-.01	-.13
MPS	.36*	-.21	.05	.04
Experienced Meaningfulness	.19	-.01	-.05	-.29
Experienced Responsibility	.01	-.09	.22	.09
Knowledge of Results	.58*	-.04	.05	-.20
Job Satisfaction	.15	.01	-.22	.01
Internal Work Motivation	.22	.21	.41*	.14
Growth Satisfaction	.10	-.15	.09	.24
Social Satisfaction	.65*	.18	.11	.18
Supervisory Satisfaction	.48*	-.10	.13	-.02
Pay Satisfaction	.10	-.08	-.12	-.08
Security Satisfaction	.05	-.30	.07	.19
				.14

*p < .05, two tailed test.

But, these data suggest that, at least for nurses, interpersonal processes are important for defining one's work competency level.

Relationships between core dimensions and work outcomes are presented in Table 11. Several interesting themes emerge. Pay satisfaction is significantly related to task significance. This suggests that work serves an instrumental function as well as being meaningful, in and of itself. This author so suggested when the importance of job involvement to job satisfaction was discussed.

Growth satisfaction is significantly correlated with supervisory satisfaction, social satisfaction, motivating potential score, job satisfaction, and security satisfaction. It appears that nurses who are generally satisfied with their jobs have experienced personal growth on the job, felt secure in the job, had jobs high on core dimensions, and had strong, positive interpersonal relationships with co-workers and supervisors.

Hackman and Oldham suggested that personal growth on the job would result in satisfaction with the job, but, from the above data, it appears that interpersonal factors as well as job characteristics are related to this process. (Hackman and Oldham have discounted the interpersonal dimension in their theoretical formulation of the process of personal growth on the job.)

Finally, relationships between the JDS scales and non-demographic variables were examined (Table 12). Nurses who

Table 11
Correlations of the Work Outcomes Among Themselves
and with the Core Dimensions

Scale	Work Outcomes					
	Security Satisfaction	Pay Satisfaction	Growth Satisfaction	Social Satisfaction	Supervisory Satisfaction	Job Satisfaction
Security Satisfaction	---	---	---	---	---	---
Pay Satisfaction	.28	---	---	---	---	---
Growth Satisfaction	.45*	.18	---	---	---	---
Supervisory Satisfaction	.30	.21	.34*	---	---	---
Social Satisfaction	.27	.17	.41*	.42*	---	---
Internal Work Motivation	-.11	.12	.03	.21	.33*	---
Job Satisfaction	.28	.12	.51*	.52*	.28	-.01
Motivating Potential Score	.43*	.22	.37*	.22	.40*	-.08
Feedback From the Job	.12	-.03	-.06	.06	.33*	-.17
Autonomy	.55*	.24	.38	.19	.13	.17
Task Significance	.07	.37*	.17	.12	.19	-.20
Task Identity	-.12	.06	.07	.19	.30	.06
Skill Variety	.16	.30	.30	.07	.23	.39*

*p < .05, two tailed test.

were self-satisfied also possessed high GNS. They described their jobs as having high levels of autonomy. These three characteristics are logically congruent.

Aversiveness was significantly and negatively related to job satisfaction and GNS (job choice). Nurses whose jobs are highly aversive are not attracted to jobs which are high on core dimensions (high GNS-job choice format). This might represent avoidance of further stimulation, which would be predicted by activation theory (Scott, 1966). Further, aversiveness is related to decreased job satisfaction.

Nurses who are highly job involved, i.e., derive their self-esteem from their work, also describe themselves as job satisfied ($r = .33$, $p < .05$) and as achieving growth through their work ($r = .29$, $p < .10$), although not significantly. The converse of this applies, of course, a relationship that was suggested by this investigator.

Finally, locus of control shows no significant correlations. This is appropriate since it has been proposed to be a moderating variable. Moderating variables influence relationships between two or more other variables, without being related to any of them.

Hypotheses

Does job involvement influence workers' affective responses to their work? Hypothesis 1: Nurses who are low on job involvement and high on growth need strength and general life satisfaction will have high self esteem and low job satisfaction. Hackman and Oldham (1975) propose that workers who desire personal growth (high CNS) will

Table 12
Correlations of the Non-Demographic Variables Among
Themselves and with JDS Scales

Non-Demographic Variables						
	Life Satisfaction	Self Satisfaction	Aversiveness	Job Involvement	Involve- ment	Locus of Control
Life Satisfaction						
Self Satisfaction	.04					
Aversiveness	.27	-.10				
Stress	-.09	.19	-.08			
Job Involvement	-.03	-.11	-.14	-.02		
Locus of Control	-.20	.10	.05	.12	.07	
Skill Variety	.33*	-.17	-.09	.11	-.01	-.04
Task Identity	-.06	.31	.17	-.14	.12	.03
Task Significance	-.12	.12	-.16	-.19	-.02	.08
Autonomy	-.06	.32*	-.01	.15	.04	-.03
Feedback from the Job	-.08	.08	-.08	-.16	-.06	.02

Table 12-continued

Non-Demographic Variables

	Life Satisfaction	Self Satisfaction	Average-ness	Stress	Job Involvement	Locus of Control
Feedback from Agents	.23	.25	-.01	.01	.02	-.18
Dealing with Others	.03	.10	-.20	.28	-.11	-.06
Experienced Meaningfulness	-.25	.11	-.22	-.22	.12	.18
Experienced Responsibility	-.17	-.16	-.03	-.06	.19	.03
Knowledge of Results	.03	.05	.08	-.20	.08	-.08
Job Satisfaction	.06	.06	-.32*	-.10	.33*	.10
Internal Work Motivation	-.03	.06	-.15	-.14	.07	-.08
Satisfaction With Pay	.21	-.19	-.02	-.06	-.16	.09
Satisfaction with Security	.17	.02	-.11	.11	.17	-.02
Social Satisfaction	.08	.07	-.02	.27	.05	-.02
Supervisory Satisfaction	.06	.09	-.05	-.23	.08	-.05
Growth Satisfaction	.29	.17	-.19	.19	.29	.19

Table 12-continued

Non-Demographic Variables						
	Life Satisfaction	Self Satisfaction	Average Stress	Job Involvement	Locus of Control	
Growth Need Strength (Would Like)	.18	.40*	-.02	.09	-.08	-.20
Growth Need Strength (Job Choice)	.41*	.35*	-.36*	.38*	-.10	-.31
Growth Need Strength (Total)	.29	.44*	-.06	.21	-.10	-.23
Motivating Potential Score	.03	.24	.04	.01	.01	-.05

*p < .05 level, two-tailed test.

achieve personal growth through jobs which are high on core dimensions. Thus, they will experience increased self-esteem and job satisfaction. Low GNS workers on high core dimension jobs, and high GNS workers on low core dimension jobs, will not experience personal growth, heightened self-esteem, or job satisfaction. This investigator proposed that all persons desire personal growth (i.e., have a high GNS); data from previous studies support this contention. It was also suggested that the differences in worker responses to their jobs was not due to differences in levels of desire for personal growth, but it was due, rather, to whether they chose to seek personal growth through work or non-work activities. This individual difference is known as job involvement.

Individuals achieving personal growth are expected to have adequate self-esteem and life satisfaction; they would not experience high job satisfaction unless they were highly job involved. This is the essence of Hypothesis 1.

Only one subject was experiencing low life satisfaction and she was excluded from this analysis. All subjects were high on GNS. The product of job involvement and growth need strength was computed and was correlated with the product of self satisfaction and job satisfaction using the Spearman ranks correlation coefficient (Table 13). This statistic was used because growth need strength was not normally distributed. A correlation of .2425 was corrected for the attenuation resulting from multiplying the reliabilities of the test instruments; Spearman's correction for attenuation was used and yielded a value of

Table 13
 Means, Standard Deviations, and Correlations of
 Growth Need Strength X Job Involvement and
 Self-Esteem X Job Satisfaction Cross-Products

Cross-Product	\bar{x}	s	$r_{uncorrected}$	$r^a_{corrected}$
Growth Need Strength X	418.24	79.62		
Job Involvement			.2425	.3701*
Self-Esteem X Job	335.64	71.83		
Satisfaction				

Note: N = 35.

^aCorrection for attenuation by the Spearman Correction for Attenuation formula.

*p < .05.

.3701. This correlation is significant at the .05 level and supports the hypothesis that knowledge of a nurse's job involvement is useful in predicting her job satisfaction, that some persons do not seek personal growth through their work.

Will Nurses' Beliefs About Locus of Control Affect the Responsibility They Experience for the Outcome of Their Work Efforts?

Hypothesis 2. Nurses with an extreme belief about locus of control will demonstrate one of the following levels of experienced responsibility for the outcomes of their work: 1. very low responsibility if they are very external in their beliefs. 2. very high responsibility if they are very internal in their beliefs.

Hackman and Oldham (1975) propose that workers will experience job satisfaction only if they believe that they are responsible for work outcome. They state this belief (experienced responsibility for work outcomes) is determined by (1) the extent to which the job allows the worker autonomous functioning, and (2) the degree to which the worker desires personal growth, i.e., has high GNS, and therefore, values autonomy. This investigator has argued that beliefs about locus of control would affect the degree of responsibility experienced for work outcomes and, consequently, the degree of job satisfaction. Thus, nurses who are very external in their locus of control would fail to appreciate their influence upon work regardless of the amount of autonomy designed into the job; nurses who are very internal would assume greater responsibility for work outcomes of their work than is realistic vis-a-vis the amount of autonomy in their work. Only those who are moderate in their beliefs experience work outcome responsibility congruent with the amount of autonomy present.

Nurses' scores on the Rotter I-E scale were trichotomized; 6.0 and 9.0 were the cutoff points. Thirty-six percent of the subjects had scores of 6 or less (highly internal); thirty-one percent were 9 or greater (highly external). Within each group autonomy scores were used to predict experienced responsibility scores by the method of linear regression. The R values for each group were tested for significant difference in ANOVA; the results are presented in Table 14.

As predicted, the relationship between the perceived autonomy and experienced responsibility was strongly positive for the high internal group of nurses; it was quite weak for the high external group. The moderate group showed the same relationship strength as did the external group; the correlation should have been much stronger. Therefore, the hypothesis is not supported.

The correlation between autonomy and experienced responsibility is very weak for all subjects; this is contradictory to Hackman and Oldham's thesis. In this group of nurses, beliefs about locus of control influenced the autonomy-experienced responsibility relationship in the predicted fashion only if the nurse was very internal. Thus, its influence on the relationships is unclear.

Can nurses gain knowledge of the results of their work from interpersonal sources as well as the design of the work itself? Hypothesis 3: Information about the interpersonal means of achieving feedback about one's work (feedback from agents and dealing with others) plus feedback from the work itself will better predict the nurses'

Table 14
 Moderating Effect of I-E Locus of Control on
 Prediction of Experienced Responsibility
 From Perceived Autonomy

Locus of Control	Correlation Between Autonomy and Experienced Responsibility	ANOVA F-Ratio	p <
High Internal	.53	4.210 (1,11df)	.06
Moderate	.19	.382 (1,10df)	.55
High External	.19	.349 (1,10df)	.57
All Subjects	.16	.919 (1,34df)	.34

Analysis of Variance

	Sum of Squares	df	Mean Square	F	p <
Between Groups	.355	4	.089	.289	.88
Within Groups	8.913	29	.307	.	

knowledge of the actual results of their work activities than will feedback from the work itself, alone.

Hackman and Oldham (1975) propose that job design influences the amount of feedback received about the results of work. They also suggest the more feedback received, the more job satisfaction is experienced. This investigator suggested that nurses receive feedback about their work interpersonally and this influences their knowledge of the results of work efforts. Ultimately, the satisfaction derived from their work would be better explained.

The Job Diagnostic Survey measures two interpersonal dimensions which could provide information about the results of one's work activities, feedback from agents and dealing with others. The influence of these factors on knowledge of results was investigated in this hypothesis.

Feedback from the work itself, feedback from agents, and dealing with others were used as independent variables in a stepwise multiple regression equation to predict knowledge of results. In stepwise multiple regression the independent variables enter the prediction equation one at a time. The first variable entered is that which accounts for the greatest variance in the dependent variable and which does so at a specified level of significance ($p < .05$ in this study). Each remaining variable is then "tried" in the equation and that one which increases R^2 (the variance) the most at the specified significance level enters the equation permanently. The process repeats until none of the remaining independent variables significantly increase R^2 . Each cycle is called a "step"; the result is a prediction equation containing only independent

variables contributing to the prediction of the dependent variable at a significant level. Table 15 summarizes the results of the analysis of Hypothesis 3.

Feedback from the work itself is strongly and positively related to knowledge of results. Feedback from the work entered the prediction equation first (Step 1); its multiple R was .52. In Step 2, feedback from agents entered the equation; the correlation between the independent and the dependent variables increased to .63 ($p < .05$). This suggests that, for nurses, feedback about work performance from supervisors and co-workers is valuable in producing understanding of the results of work activities. Dealing with others, the extent to which the job requires nurses to work closely with other people, does not contribute significantly to knowledge of work outcomes. This implies that nurses receive little feedback from their patients about work effectiveness. Therefore, a portion of the hypothesis is supported.

Is job satisfaction among female nurses influenced by the job's ability to satisfy both lower order and higher order needs? Hypothesis 4: Information about the degree to which a job satisfies lower order needs will be helpful in predicting the nurses' general satisfaction with the job. Hackman and Oldham (1975) propose that job satisfaction results from job design which promotes personal growth, i.e., satisfies higher order needs of workers who desire personal growth. The potential for a job to satisfy higher order needs is determined by computing its Motivating Potential Score (MPS) according to the following formula:

Table 15
 Stepwise Prediction of Knowledge of Results
 from Three Sources of Feedback

Independent Variable Entered	Multiple R with Dependent Variable	Regression Coefficient	ANOVA F-Ratio*
Step 1	.52		12.91 (1, 34df)
Feedback from the Work		.52	
Step 2	.63		10.84 (2, 33df)
Feedback from the Work		.39	
Feedback from Agents		.23	

Note: Dependent Variable: Knowledge of Results

Independent Variables: Feedback from the Work Itself
 Feedback from Agents
 Dealing with Others

*p < .05, two tailed test.

$$\frac{(\text{skill variety} + \text{task identity} + \text{task significance})}{3} \times \text{autonomy} \times$$

feedback from the job = MPS

This investigator proposed that satisfaction of lower order needs is important to job satisfaction, particularly for nurses who seek personal growth through non-work activities. The JDS measures satisfaction with four lower order needs: pay, security, socialization, and supervision.

A stepwise multiple regression model was used to test Hypothesis 4; this procedure has been explained previously. First, job satisfaction was predicted from the MPS; then, lower order need satisfactions were added in a stepwise fashion. The results are presented in Table 16.

MPS did not account for sufficient variance at the $p < .05$ level to enter the prediction equation; therefore, in Step 1, it was "forced" into the equation so that its relative contribution to job satisfaction could be determined. The multiple R from MPS alone was .21, much lower than the .46 reported by Oldham et al. (1978); this accounted for only 5% of the variance. In Step 2, the stepwise model was used in its normal fashion; only those variables which contributed significantly to the prediction of job satisfaction remained in the equation. Satisfaction with supervision was the only independent variable to contribute significantly. This contradicts the thesis of Hackman and Oldham. But, it is consistent with previous results which suggest that supervisory feedback is important if nurses are to recognize the consequences of

Table 16
Stepwise Prediction of Job Satisfaction from MPS
and Lower Order Need Satisfactions

Independent Variable Entered	Multiple R with Dependent Variable	Regression Coefficient	ANOVA F-Ratio*
<hr/>			
Step 1 ^a			
Motivating Potential			
Score	.21	.003	
Step 2			
Supervisory Satisfaction	.49	.34	10.64 (1,34df)
<hr/>			

Note: Dependent variable: Job Satisfaction

Independent variables: Pay Satisfaction
Security Satisfaction
Social Satisfaction
Supervisory Satisfaction
Motivating Potential Score

^aMPS was "forced" into the regression equation in order to determine its contribution to the prediction of job satisfaction even though its contribution was not significant at the .05 level. In Step 2 the variables entered the equation as predictors only if they contributed to the prediction of job satisfaction at the $p < .05$ level. MPS was dropped from the equation at this point.

* $p < .05$, two tailed test.

work activities. Therefore, the hypothesis that satisfaction of lower order needs contributes to job satisfaction in nurses is confirmed.

Might stress and aversiveness in work be special forms of high skill variety which reduce job satisfaction? Hypothesis 5: High skill variety nursing jobs which are high on stress and/or aversiveness will produce a low level of experienced meaningfulness and, thus, a low level of job satisfaction. Hackman and Oldham (1975) state that work is meaningful only if it requires the use of a number of different talents and skills in performing a variety of tasks (high skill variety). They imply a positive linear relationship between variety and meaningfulness, i.e., the greater the variety, the greater the meaningfulness. This is logically inconsistent with activation theory (Scott, 1966); it suggests that extreme work variety (either high or low) results in negative affective response in the worker. Hackman and Oldham and activation theory agree on the effects of low levels of variety but differ on the issue of high levels. This investigator proposed that excessive skill variety produces job dissatisfaction. There are two characteristics of nursing work which could produce excess skill variety and place taxing demands upon the nurses. The first is stress in the work and the work environment. The nurses were asked to rank order the work units on the amount of stress which they believed to be present in the work and work environment; the rank of each unit became that unit's score. Second, nursing work can be divided into aversive and pleasant tasks (Godfrey, 1978a). This researcher proposed that the presence of aversive tasks and/or the absence of pleasant tasks was aversive. The subjects were asked to indicate the frequency with which they performed aversive and pleasant tasks in their daily activities.

The subjects were trichotomized on the stress and aversiveness variables using the following cutoff points: stress, 2,3; aversiveness, 34,38. One-fourth of the subjects were in the extreme groups for each variable. Subjects who described their jobs as low in skill variety (JDS scale score < 4) were deleted. For each of the six groups, experienced meaningfulness was predicted from skill variety by linear regression; multiple R's were compared for significant difference.

The effect of stress on the skill variety-experienced meaningfulness relationship is summarized in Table 17. The relationship is very weak ($R=.08$) and nonsignificant for the subjects as a whole. This contrasts with the strength of this relationship reported by Hackman and Oldham (1975). There is no evidence that the level of stress in nurses' work affects the skill variety-experienced meaningfulness relationship.

Table 18 presents the results of the investigation. The effect of aversiveness on the skill variety-experienced meaningfulness relationship is summarized in Table 18; the results are similar to those for stress. The relationship between skill variety and experienced meaningfulness is weak for all subjects; there are no significant differences among the groups.

There was no evidence to support Hypothesis 5, but several findings encourage further exploration. Aversiveness correlated significantly

Table 17
 Prediction of Experienced Meaningfulness from Skill Variety
 for Nursing Jobs with Three Levels of Stress

Stress Level	Correlation Between Skill Variety and Experienced Meaningfulness	ANOVA F-Ratio	p <
High	.12	.25 (1, 10df)	.63
Moderate	.01	.12 (1, 10df)	.74
Low	.26	3.138 (1, 9df)	.11
All Groups	.08	.29 (1, 33df)	.59

Analysis of Variance

	Sum of Squares	df	Mean Square	F	p <
Between Groups	0.355	4	.089	.289	.88
Within Groups	8.913	29	.307	.	

Table 18
 Prediction of Experienced Meaningfulness From Skill Variety
 for Jobs with Three Levels of Aversiveness

Aversiveness Level	Correlation Between Skill Variety and Experienced Meaningfulness	F-Ratio	p <
High	.14	.14 (1, 7df)	.72
Moderate	.10	.20 (1, 18df)	.66
Low	.18	.16 (1, 5df)	.71
All Groups	.12	.512 (1, 34df)	.48

Analysis of Variance

	Sum of Squares	df	Mean Square	F	p <
Between Groups	.432	4	.108	-	.88
Within Groups	10.793	30	.360	.30	

with job satisfaction (-.32, $p < .05$) and with GNS (job choice) (-.36, $p < .05$). It also correlated negatively with experienced meaningfulness ($r=-.22$), this was not significant. These results suggest that aversiveness of work relates to job satisfaction derived by a nurse; that a consequence of working at an aversive job is the desire to seek less complex work. The problem with the analysis of Hypothesis 5 may be the weak skill variety-experienced meaningfulness relationship rather than an incorrectly proposed effect of aversiveness.

Stress also failed to behave as predicted; this may be a function of the manner in which it was defined as well as the weak skill variety-experienced meaningfulness relationship. An individual's response to the environment is a function of the perception of the environment rather than its objective reality. Stress was defined by a consensus of the nurses on the amount of stress present within each work unit rather than each nurse's assessment of the stress in her own work environment. One nurse might perceive the surgery unit to be extremely stressful while another might see no stress in it. Defining stress by individual perceptions would be more appropriate.

Will a more extensive and additive model for the prediction of job satisfaction be more adequate than the multiplicative model proposed by Hackman and Oldham? Hypothesis 6. An additive multiple regression equation employing all of Hackman and Oldham's predictions plus these variables suggested to be influential by the testing of Hypothesis 1-5 in this study will better predict general job satisfaction than will Hackman and Oldham's multiplicative model.

According to Hackman and Oldham (1975), job satisfaction results if a person who desires personal growth (high GNS) works at a job which is

designed to possess high quantities of five core characteristics: skill variety, task identity, task significance, autonomy, and feedback from the work. Job satisfaction will not result unless all of the core characteristics are present in high quantities (i.e., the model is disjunctive). They developed a mathematical model for predicting job satisfaction from the core characteristics:

$$\frac{(\text{skill variety} + \text{task identity} + \text{task significance})}{3} \times \text{autonomy} \times$$

feedback = motivating potential score (MPS).

Each core characteristic is assessed by the Job Diagnostic Survey; the MPS is derived according to the formula and job satisfaction is then predicted from the MPS.

This investigator suggested that the above model has two major drawbacks which limit its effectiveness for predicting job satisfaction. First, the model is multiplicative and disjunctive, i.e., the scores are multiplied together to derive a composite score, the MPS, which is used to predict job satisfaction. Each core characteristic is measured by a scale on the JDS; each scale possesses measurement error (reflected in the scales' reliability coefficients). When these scale scores are multiplied, their error is also multiplied (i.e., their reliabilities are attenuated); the MPS is likely to contain a great deal of error which limits its effectiveness for predicting job satisfaction. There are two methods for resolving this problem; the simpler method is to use an additive model, i.e., add rather than multiply the scale scores together. This model does not fit the Hackman and Oldham supposition of a disjunctive model (i.e., all core characteristics must be present in high quantities) as well as the multiplicative model fits it.

The second option is to correct the composite score for the attenuation of the reliabilities of the scale scores (i.e., the compounding of their error) caused by multiplying them. There are two formulae available which correct for the attenuation of reliabilities, Spearman's Correction for Attenuation formula and Mosier's formula for the reliability of composite scores (Guilford, 1954). The first is used when independent scores are multiplied; it is not useful for correcting the MPS because the core characteristic scores are not independent. The second is appropriate for related scores, but only if the scores are added. Neither formula is useful for the problem in this study and this investigator was unable to uncover an applicable formula. Therefore, correcting the MPS for attenuation is not possible with the mathematical tools currently available.

There is a second major drawback to Hackman and Oldham's model; it fails to consider the influence on job satisfaction of several factors which would logically appear to impact. This criticism spawned Hypotheses 1-5. This investigator suggested that job satisfaction would be more effectively predicted if these additional variables were included within the model.

Hypothesis 6 was tested in four steps:

1. Job satisfaction was predicted from the MPS (multiplicative disjunctive model) using a linear regression model,
2. Job satisfaction was predicted from the core characteristics using a linear regression model (additive model),
3. Job satisfaction was predicted from the MPS, aversiveness, job involvement, the lower order need satisfactions, and growth satisfaction, (complete multiplicative model), and

4. Step 3 was repeated but the core characteristics were substituted for the MPS (complete additive model).

Table 19 presents the results of the analysis; the pattern is apparent.

Neither the multiplicative ($R = .22$, $R^2 = .05$) nor the additive model ($R = .40$, $R^2 = .16$) predicted job satisfaction at a significant level ($p < .26$, $p < .34$, respectively). However, in the additive model, the strength of the prediction is almost double that of the multiplicative model; the amount of variance accounted for trebles.

This appears to be clear evidence that the multiplicative model magnifies the measurement error of the JDS scales; this would obscure the strength of the core characteristics-job satisfaction relationship.

When additional variables were added to each of these models the strength of the predictive relationship increased significantly. Both the multiplicative and additive models account for significant variance in job satisfaction ($p < .02$ and $p < .004$, respectively); but, the additive model is clearly superior. It accounts for 65% of the variance compared to 46% by the multiplicative model.

These results have two implications. First, it appears that job satisfaction for nurses results from more than high levels of the five core characteristics. Satisfaction of lower order needs, the aversiveness of the tasks, and the extent to which nurses derive self-esteem from work also contribute.

Second, the assumption of a multiplicative, disjunctive relationship among the core dimensions did not prove to be superior to a parsimonious

Table 19
 Additive vs Multiplicative Models for Predicting
 Job Satisfaction

Model	Multiple R	Multiple R ²	F	p <
MPS Alone (Multiplicative)	.22	.05	1.28 (1, 34df)	.26
Core Characteristics (Additive)	.40	.16	1.174 (5, 30df)	.34
MPS Plus Others (Multiplicative Complete)	.68	.46	2.94 8, 27df	.02
Core Characteristics Plus Others (Additive Complete)	.80	.65	3.611 (12, 23df)	.004

additive model. It was noted earlier that the nurses in this sample rated their jobs as being significantly lower in task identity than did professionals in industry; yet, the nurses claimed significantly greater experienced meaningfulness. Hackman and Oldham's model states that all core dimensions must be present in high quantities in order to produce the critical psychological states in high quantities. For the nurses in this study this was not the case. The amount of critical psychological state produced was not directly related to the amount of core dimensions present in the job. One explanation is that individual workers or cultural and vocational subgroups respond differentially to the core characteristics. If this is the case, a non-disjunctive additive model addresses this issue with greater flexibility than does the multiplicative disjunctive model. An alternative explanation is that the multiplicative model is more accurate but, the process of multiplying the JDS scale scores compounds the error and the strength of the relationships between the core dimensions, the psychological states and job satisfaction is masked. Unfortunately, this cannot be tested because an appropriate formula for correcting such attenuation does not exist.

Hypothesis 7 stated that nurses' propensity to leave their jobs could be predicted by the regression equation found in Hypothesis 6 to be most effective in predicting job satisfaction. The variable propensity to leave lacked sufficient variability to test the hypothesis.

Summary

The sample differed from normative groups in only a few respects. The nurses described their jobs as significantly more sophisticated and complex than jobs of all workers in private industries. However, in most instances their job descriptions did not differ substantially

from the job descriptions offered by professionals working in private industries (Oldham et al., 1978). Nurses described their work as having a greater impact on others and as having more ambiguity of results than industry professionals' work. Nurses also experience their work as being more meaningful. These characteristics are congruent with common-sense notions about nursing work.

The results suggest that all persons desire personal growth (i.e., have high growth need strength); yet, people differ on choosing to pursue personal growth through work or non-work activities (i.e., level of job involvement). For example, low job involved nurses do not derive personal growth through the tasks they perform; rather, the interpersonal relationships at work are growth inducing.

Relationships with supervisors and co-workers also provide feedback to nurses about the outcome of work efforts. This was not true of a nurse's relationships with patients. Feedback about work performance is critical to job satisfaction.

There was no evidence that locus of control influenced the responsibility experienced by a nurse for work outcomes. Also, neither stress nor aversiveness influenced the meaningfulness a nurse derived from work. Aversive tasks and low job satisfaction were significantly related, however.

An additive combination of the core job dimensions accounted for more variance in job satisfaction than did a multiplicative model; neither accounted for a significant amount of the variance. When information about job involvement, task aversiveness, lower order need satisfaction, and growth satisfaction was included among the independent variables, job satisfaction was predicted at a significant level

($p < .004$). This suggests that job satisfaction is a complex phenomenon which is influenced by more than just the nature of the tasks performed.

CHAPTER V DISCUSSION

The nursing profession has been plagued with a high rate of turnover. The results are grievous. Nursing job turnover has been examined from the perspectives of several models of job satisfaction. Implementation of the results of these studies has not reduced turnover significantly. The purpose of this study was to more adequately describe the phenomenon of nursing job satisfaction.

The theoretical foundation of this study was a modified version of the job satisfaction model constructed by Hackman and Oldham. Their basic theory states that workers who are desirous of higher order need satisfaction (i.e., personal growth) respond favorably to five core job characteristics which satisfy higher order needs. The consequence is job satisfaction, personal growth, and heightened self-esteem. Those workers who do not desire higher order need satisfaction will not respond positively to the five job characteristics.

This theory was examined to determine whether it included both breadth and depth necessary to be applicable to nursing work and to determine if it was founded on any questionable theoretical assumptions. Several modifications were proposed. Seven hypothesized relationships were established: (1) All nurses desire personal growth (higher order need satisfaction), but they differ on whether they pursue it through work or non-work activities (job involvement); (2) Locus of control influences a nurse's experienced responsibility for work outcomes; (3) Stress and task aversiveness decrease experienced meaningfulness of

nursing work; (4) Interpersonal relationships are a source of feedback about the outcome of work efforts; (5) Nursing job satisfaction is influenced by satisfaction of lower order needs by the job; (6) A broader additive model predicts job satisfaction in nurses better than Hackman and Oldham's narrow multiplicative model; (7) Variables which predict job satisfaction also predict propensity to leave the job.

Thirty-six white, female, direct care nurses working in a medium-sized general hospital comprised the sample. The subjects were normally distributed on age, marital status, and educational background. All work shifts and work units were adequately represented. The nurses were stable vocationally but 47% had changed jobs at least once during the previous five years.

The subjects were administered the Job Diagnostic Survey, the Rotter I-E Scale, the Job Involvement Scale, and the Janis-Field Feelings of Inadequacy Scale. Also measured were life satisfaction, work stress, and aversiveness in the work.

Results of this study indicate that all nurses desire satisfaction of higher order needs; they differ on whether these needs are satisfied through work or non-work activities (job involvement). Interpersonal relationships at the workplace are a source of personal growth, especially for less job involved nurses.

Interpersonal relationships at work also provide nurses with feedback about the outcomes of their work efforts. This is particularly true of the supervisory relationship. Nurses describe the endproducts of their work as being ambiguous so feedback is vital to job satisfaction.

Neither stress nor aversiveness affects nurses' experienced meaningfulness of their work. Aversiveness correlated significantly with job satisfaction ($r = -.32$, $p < .05$) and with desire for complex work ($r = -.36$, $p < .05$).

Satisfaction of lower order needs was related to job satisfaction. The most important of these were interpersonal.

There was no evidence that locus of control influenced job satisfaction. Internals experienced significantly greater responsibility for work outcomes than did externals. Moderates, however, behaved like externals.

An expanded model (including information in addition to task characteristics) predicted job satisfaction among nurses better ($R = .80$, $p < .004$) than the task characteristic only model ($R = .22$, $p < .26$). An additive model performed better than a multiplicative model.

Results and Their Implications

Alternative Relationships Among the Theory's Components.

This investigator proposed three alternative relationships among the components of Hackman and Oldham's theory which would make the theory more applicable to the problem of job satisfaction among nurses. First, Hackman and Oldham state that workers must have knowledge of the outcomes of work activities for job satisfaction to occur. They state that the job must be designed to provide feedback. This investigator proposed two additional sources of feedback about work outcomes: (1) supervisors and co-workers (feedback from agents) and (2) patients and their families (dealing with others).

This study found that interpersonal means of achieving feedback about the results of work activities is very important. Knowledge of results was predicted from the three sources of feedback; feedback from the work and feedback from agents accounted for 40% of the variance ($p < .05$). Dealing with others did not contribute significantly.

Other relationships among the data add support to this interpretation. Feedback from agents correlates ($p < .05$) with satisfaction with the supervisory relationship ($r = .49$), with task identity ($r = .38$), with satisfaction with social components of the job ($r = .65$), and with the MPS ($r = .36$). These data suggest that receiving feedback about one's work efforts from supervisors and co-workers allows nurses to accurately define and delimit their work products. The nurses in this sample described their work as significantly more ambiguous than did professionals in private industry ($t = 3.88$, $p < .05$); the need for an accurate definition of the work appears to be important to nurses' appreciation of the outcomes of their work and, ultimately, to their job satisfaction. Half a century ago, Vernon (1921) demonstrated the importance of perceiving work activities as leading to a completed and whole project. Hackman and Oldham recognize this in their theory but fail to consider the circumstances of professions in which the finished product may be ambiguous (e.g., nursing). In this instance, the nature of the product limits the amount of feedback which nurses receive from the work itself; alternative feedback sources (supervisors and co-workers) are needed. The human relations movement (e.g., Homans, 1950; Marrow et al., 1967) and socio-technical systems theory (Herbst, 1974) both suggest that the social system within which the work is performed influences job satisfaction. Hackman and Oldham (1974) state that the social

system interferes with work performance and does not contribute to work satisfaction. This study supports the importance of the social system to job satisfaction and demonstrates a specific instance of its influence; the human relations movement and socio-technical systems theory have not been that specific. Nursing service administrations would do well to institute procedures which enhance the process of feedback to nurses from their co-workers and supervisors.

Dealing with others (patients and their families) did not contribute to the nurses' knowledge of their work efforts results. It cannot be determined from the data if this type of feedback is unimportant or if it is merely absent from the work setting. Social exchange theorists who follow an economic model (e.g., Thibault & Kelley, 1959) would suggest that failure to receive adequate feedback from patients who have received caregiving would result in frustration and anger among the nurses. Again, it is not clear from the data if this is occurring. Other helping professions such as teachers, counselors, and psychiatrists often are in the same situation; the question is worthy of exploration.

This investigator proposed a second major alteration of the theory of Hackman and Oldham. Their thesis fails to consider the influence on job satisfaction of satisfaction of lower order needs of nurses by their jobs. This investigator proposed that the extent the nurses' jobs satisfied four lower order needs (supervision, pay, social relationships, security) influenced overall job satisfaction. Only one of these needs, satisfaction with supervision, accounted for enough variance in job satisfaction ($R^2 = .25$, $p < .05$) to be useful in predicting it. Job satisfaction correlated with social satisfaction ($r = .28$) and security satisfaction ($r = .28$) but not significantly. This suggests that

satisfaction of the need for interpersonal contact is satisfied largely through the supervisory relationship; this contributes to job satisfaction.

Hackman and Oldham state that satisfaction of higher order needs and job satisfaction occur when workers high on GNS are working in a job high on the core dimensions (high MPS). When the MPS was used in combination with the lower order need satisfactions to predict job satisfaction the MPS alone accounted for only about 4% of the variance. The supervisory relationship is much more important to nurses than the characteristics of their work.

The JDS measures higher order need satisfaction; this measure is termed growth satisfaction. A post hoc analysis was conducted in which the lower order need satisfactions, the MPS, and growth satisfaction were used in a stepwise linear regression equation to predict job satisfaction. Two of the dependent variables accounted for enough of the variance in job satisfaction ($p < .05$) to be included in the equation, growth satisfaction and supervision satisfaction. These variables showed a multiple R of .63 and predicted 40% of the variance in job satisfaction. It appears that a job might satisfy needs from all levels of the need hierarchy; satisfaction with a job reflects the sum of the needs satisfied rather than only the amount of personal growth achieved from the job. This is consistent with Maslow's theory but goes beyond the thesis of Hackman and Oldham.

It was previously noted that relationships with supervisors and co-workers provide nurses with feedback about the effectiveness of their work, that this contributes to their job satisfaction. Other relationships in the data suggest that interpersonal aspects of a job contribute

to job satisfaction. Personal growth (growth satisfaction) contributes significantly to the prediction of job satisfaction; it also correlated significantly ($p < .05$) with security satisfaction (.45), supervisory satisfaction (.34), social satisfaction (.41) and the MPS (.37). These relationships suggest that the social components as well as the design of the job are related to the amount of personal growth and job satisfaction that nurses derive from their work. This is consistent with both the human relations and the socio-technical system theory (Herbst, 1976) perspectives.

The application of these findings would contradict the proposal of Hackman and Oldham that interpersonal aspects of work are detrimental to production goals of the hospital administration and do not contribute to job satisfaction among the nurses. Herbst (1974, 1976) suggested that a balance must be achieved between the production needs of the organization (technical component) and the interpersonal needs of the workers (social component) in order to maximize job satisfaction. This study supports this proposition. Hospitals would be well advised to provide opportunities for interpersonal interaction among its nurses during and after the work hours. Activities such as support groups or hospital financed recreational activities would probably meet these needs. It will be demonstrated later in this section that, for some nurses, non-work characteristics of the job are more growth producing than are the task characteristics, themselves.

The final alternative relationship proposed by this investigator for the components of the Hackman and Oldham theory concerned the mathematical formula used to predict job satisfaction. Hackman and Oldham present a multiplicative disjunctive model in which all core

characteristics must be present in high quantities to produce high job satisfaction. The JDS measures of these core characteristics are combined by multiplication to form the MPS which is then used to predict job satisfaction. This investigator proposed that the process of multiplication compounds the measurement error in each of the JDS scale scores, that the attenuation of the reliabilities masks the strength of the relationship between the core dimensions and job satisfaction.

It was also proposed that the multiplicative model did not allow for individual preferences for some of the core dimensions over others. Consequently, this investigator proposed that an additive model for predicting job satisfaction would be more adequate than the multiplicative model and that job satisfaction could be more completely predicted if variables in addition to the core dimensions were used.

The data supported the use of an additive model over a multiplicative model in two ways. Neither the multiplicative nor the additive regression model predicted job satisfaction at the $p < .05$ level; the additive model, however, accounted for more than three times the variance than did the MPS ($R^2 = .16$ vs $R^2 = .05$). When the additional variables (job involvement, aversiveness, the lower order need satisfactions, feedback from agents, and growth satisfaction) were added to the prediction equations, the change was dramatic. Both models predicted job satisfaction at a significant level but the additive model was clearly superior ($R = .80$, $R^2 = .65$, $p < .004$ vs $R = .68$, $R^2 = .46$, $p < .02$).

Another bit of data supported the use of an additive model; it suggested that different persons or vocational subgroups respond differentially to the various core dimensions (i.e., some are more

important than others for the development of job satisfaction in different persons). Compared to professionals in private industry, nurses described their work as significantly lower in task identity and significantly higher in experienced meaningfulness and task significance. The multiplicative model states the higher that the core dimensions are (in this case skill variety, task identity, and task significance), the higher will be the related critical psychological state (in this case, experienced meaningfulness). This assumes all persons respond to each core dimension in the same fashion. The data from this study suggests that, for nurses, the significance of their work is more important than a clearly defined result for producing a sense of meaningfulness to the work. People choose among vocations, in part, by considering the potential for that vocation to satisfy needs. One might assume that nurses, as a group, possess common vocational needs and that these needs might differ from those of an engineer, an attorney, an accountant, or a psychologist. Consequently, one would expect that different vocational groups would respond differentially to the core dimensions; an additive model provides more flexibility than the multiplicative model for addressing this issue.

This study provided evidence that an adequate understanding of job satisfaction among nurses requires more information than the core job dimensions, alone. When aversiveness, lower order need satisfactions, growth satisfaction, job involvement, feedback from agents, and core dimensions were used to predict job satisfaction the amount of variance accounted was 65%; the MPS alone accounted for only 5% and the core dimensions alone predicted 16%. The conclusion is that nursing jobs involve not only tasks to be performed but also, interpersonal

relationships, a work environment, and expectations of potential to satisfy both lower order and higher order needs. A complete understanding of job satisfaction among nurses considers the interactions among the work, the work environment, and the nurse, not merely the work itself.

A post hoc analysis was conducted to determine which additional variables contributed job satisfaction at a significant level ($p < .05$). Core characteristics, aversiveness, growth satisfaction, feedback from agents, and job involvement were used as predictors of job satisfaction in a stepwise multiple regression equation. Growth satisfaction and supervisor satisfaction were the only two variables which accounted for variance ($R^2 = .39$) in job satisfaction at the $p < .05$ level. Thus, the factors which are most important to job satisfaction among nurses are the relationship with the supervisor and the personal growth obtained from the job.

This conclusion is somewhat vague and requires close scrutiny. In stepwise regression an independent variable which might account for significant variance in the dependent variable will not enter the equation as a predictor if another variable with which it is correlated to a great degree has already done so. Therefore, intercorrelations among the variables entering the equation and those not entering it must be examined to make the most sense of the results. This is appropriate in this case since the stepwise equation accounted for only 39% of the variance; the full linear equation reported earlier accounted for 65% and this is a considerable loss. Growth satisfaction correlates positively ($p < .05$) with three lower order need satisfactions (security, supervision, social) and the MPS. Supervisory satisfaction correlates

positively with social satisfaction and feedback from agents; feedback from agents has been previously related to task identity, feedback from the job, the MPS, and knowledge of results. Interestingly, growth satisfaction and supervisory satisfaction are moderately correlated ($r = .34$, $p < .05$) yet both entered the job satisfaction prediction equation; this suggests that they share common variance but also contribute uniquely to job satisfaction among nurses.

Personal growth appears to be a function of the interpersonal components of the work (social and supervisory) as well as the characteristics of the work performed (MPS). It is demonstrated later in this section that interpersonal components of the job are the primary growth promoter and job satisfier for some nurses. For this sample of nurses, the supervisory relationship not only satisfies social needs but also, (along with co-worker relationships) is a primary means for achieving feedback about the quality of work outcomes and for defining the limits and products of the work (task identity).

Practically speaking, these results suggest a need for optimizing the quality and effectiveness of the interpersonal components of a nurse's work. This aspect of the nursing work environment is related to both personal growth and favorable response to nursing jobs which are high on the core dimensions. Again, the results of this study suggest that the Hackman and Oldham model for job satisfaction is incomplete vis-a-vis job satisfaction among nurses; they point toward the necessity for considering interpersonal components of work, e.g. socio-technical systems theory.

Individual Differences.

Hackman and Oldham consider the influence of individual differences on the development of job satisfaction. They propose that worker desire for personal growth (GNS) moderates the relationship between job characteristics and the worker affective response; only workers who desire personal growth will respond positively to jobs which are high on the core dimensions. Stating that all persons do not desire personal growth contradicts the foundation of humanistic psychology, Hackman and Oldham's (1974, 1975) data, and the data from this study; each clearly suggests that GNS is high in all persons.

This investigator proposed that it was not desire for personal growth which differentiated among nurses with respect to job satisfaction; but, it was whether they chose to seek personal growth through work or non-work activities, i.e., their degree of job involvement. Several conclusions from the data supported this reasoning. The cross-product of job involvement and GNS correlated positively and significantly with the cross-product of self-esteem and job satisfaction. Thus, nurses low on job involvement and desiring personal growth can have high self-esteem (indicating that they are achieving personal growth) even if their job satisfaction is low. This implies that they are achieving personal growth outside of the job. What prevents these low job involved people from quitting their jobs or suffering tremendously each day at work? There are two suggestions. Money is an instrumental necessity in our society and work may become an instrumental task for low job involved nurses. Satisfaction with pay correlated significantly with task significance ($r = .37$, $p < .05$); this relationship might support the notion of instrumentality for low job involved nurses but it

was not specifically tested. Second, there is strong evidence throughout the data that interpersonal factors at work have a powerful influence on growth satisfaction and job satisfaction. It might be surmised that low job involved nurses respond more positively to the interpersonal components of the work setting than to the work itself; in this way they achieve personal growth while on the job. This was not specifically tested in this study although Katz (1978) found that as longevity increases, the relationship between core characteristics and job satisfaction weakens. Interpersonal relationships may become the source of satisfaction which keeps the employee at the job.

Hospital management would be well advised to respond to the interpersonal needs of its nurses; it appears that this might be the area of greatest satisfaction for those who are least invested in work. Attending to these needs would provide a means of personal growth for these nurses and this, in turn, should make the work place more attractive. The turnover rate would lower.

Hackman and Oldham state that autonomy designed into a job affects experienced responsibility for work outcomes. This investigator proposed that an individual difference variable (beliefs about locus of control) moderates that relationship. The data established that extremely internal nurses experience very high ($R = .5$, $p < .06$) responsibility for work outcomes; extremely external nurses show little experienced responsibility ($R = .19$, $p < .57$). The moderate group failed to show a relationship of intermediate strength ($R = .19$, $p < .55$) so the overall results are equivocal.

Nursing Specific Modifications.

This investigator proposed that the Hackman and Oldham theory of job satisfaction contradicted activation theory (Scott, 1966); this is relevant to the work of nurses. Their theory states that the more skill variety designed into a job, the greater would be the worker's experienced meaningfulness. Activation theory has empirically supported an inverted-U relationship between level of activation and affective response to a task. This investigator proposed that environmental stress and aversiveness of nursing work are conditions which could be construed as skill variety overload; they would decrease experienced meaningfulness rather than enhance it. There were no significant differences in the strength of the skill variety-experienced meaningfulness relationship at three levels (high, medium, low) of stress or aversiveness. There was, however, a significant negative correlation between aversiveness and job satisfaction ($r = -.32$, $p < .05$) and GNS (job choice) ($r = -.36$, $p < .05$). Nurses who work in jobs which consist of frequent aversive tasks and infrequent pleasant tasks (primarily patient care-giving) express significant dissatisfaction with their jobs and a significant preference for jobs which are low on the core dimensions. Activation theory predicts that workers who are over-activated will avoid further activation by their work. The nurses in this sample who were overtaxed by aversiveness avoid further stimulation by avoiding high core dimension work.

Godfrey (1978a, 1978b, 1978c) reports that many nurses are dissatisfied with their work because they are unable to provide care-giving to their patients. The pleasant tasks on the aversiveness scale reflect the types of caregiving which these nurses would like to

provide (e.g., bathing and grooming a patient); the unpleasant tasks are caregiving behaviors which are unpleasant to perform (e.g., changing an infected dressing). The scale may not measure aversiveness, *per se*, and this could explain its failure to influence the skill variety-experienced meaningfulness relation. It is, however, related to job satisfaction for nurses as well as their willingness to pursue other challenging jobs. Whether it is necessary to desensitize nurses to the unpleasantness of their work, increase their opportunities to perform pleasant caregiving tasks, or both in order to maximize their job satisfaction cannot be answered by this study. However, this aspect of nursing work has a demonstrated impact on nurses and deserves the attention of those who design staff nurse work activities.

Some Practical Implications

A major conclusion of this study is that relationships between nurses and their co-workers and supervisors are integral to the development of job satisfaction on two levels. First, these relationships appear to be essential to recognizing one's competency in one's work and to adequately defining the products on one's endeavors. Second, high quality relationships in the job environment are very important for nurses who are not job involved and do not achieve personal growth, working on jobs high on the core dimensions. Second, personal growth occurs through healthy relationships; all nurses, regardless of their job involvement, could be expected to grow through their jobs if healthy relationships were available. This would result in a positive appraisal of the work setting which might reduce job turnover.

There are several ways of promoting effective communication and growth facilitating relationships among nurses. With the cooperation of

the hospital administration, recreational activities during the afterwork hours could be useful for providing interpersonal contact in a non-work situation. During working hours, interpersonal support groups and inservice training in communications skills could be effective for developing healthy relationships. Supervisory nurses typically ascend to their position through tenure; they are usually not trained in human relations aspects of administration although this study suggests that such skills are crucial.

The greatest impact could probably be made at the level of nursing education, however. The results of this study suggest a clear need for training in interpersonal and communication skills. A humanistic, affective component added to nursing training which creates a sensitivity and responsiveness to the needs of others and self would be effective.

The need for clear and frequent formal feedback about work performance also appears to be important. Those hospitals which do not have such a procedure would do well to implement one. Increasing feedback from patients might be valuable.

A second practical implication of the results of this study relates to the pleasant and unpleasant tasks which nurses perform on a daily basis. Nurses expect to provide caring for patients and become frustrated when they are unable to do so. They must also perform tasks which are aversive; this is related to low job satisfaction. Supervisors should be cognizant of this and make efforts to provide time during the day for nurses to perform pleasant tasks. They might also rotate the assignment of patients who require many unpleasant duties.

Nurses seem to have unmet expectations about their vocation which result in job dissatisfaction. This points to the need for adequate

pre-training vocational exploration allowing future nurses to develop realistic expectations about their prospective work. This is the responsibility of the universities and would probably benefit students regardless of their proposed profession.

Limitations

There are several limitations of the sample which might affect the generalizability of these results. The sample is entirely female and, because of differences in the socialization process for males and females, there may be significant differences between male and female nurses. The sample is entirely white; the effects of subcultural differences is unknown. Finally, the sample is drawn from a suburban and rural population. Their test scores were fairly consistent with those for the general population, but it would be valuable to compare this group of nurses with those from a large inner-city hospital.

The definition of stress in this study is problematic. It was defined by having all of the nurses rate each work unit on the degree of stress which they believed to be present in the work of that unit. Behavior is a function of an individual's perception of the environment, not a collective perception. The stress variable should reflect each individual nurse's perceptions rather than the mean perception of the group. This may account for the failure of that variable to demonstrate the expected influences.

Finally, this investigator originally proposed that the MPS be corrected for attenuation before it was used to predict job satisfaction; this would provide a more accurate means of comparing the multiplicative and additive models. An appropriate formula for such a correction does

not exist so a shadow remains over the conclusion that the additive model is more effective for predicting job satisfaction.

Recommendations for Further Study

The results suggest several directions for new research. To test the generalizability of the results the study should be repeated with male nurses, non-white nurses, and inner-city nurses as subjects.

The stress and aversiveness variables demand further attention. The stress variable must be revised to represent individual perception of stress present in the environment; it is this perception to which the nurse responds. The aversiveness factor consists of the presence of unpleasant tasks and the absence of pleasant tasks in nurse work. This investigator assumed that the sum of these would reflect aversiveness in the nurse work environment. This variable was negatively related to job satisfaction; there was a suggestion in the data that it was also related to avoidance of highly stimulating jobs. This would be predicted by activation theory (Scott, 1966) but aversiveness failed to relate as expected to skill variety. This relationship requires clarification.

The results of this study allude to the preference of some nurses for some core characteristics more than others, that their preferences are different from the preferences of other vocational groups. This suggests the importance of an additive model for the core dimensions; they are differentially weighted according to vocational group in question.

A final direction for new study relates to the data from nurses to the problems of job satisfaction among other helping professionals. Are there conditions common and unique to all helping professions which contribute to attrition of their members? One possible avenue for

inquiry concerns the ambiguous nature of the end products of helping work. This study suggested that the interpersonal relationships among the nurses contributed to their ability to define their effectiveness and delimit the products of their work. This was not true of their relationships with their patients. Social exchanges theorists (e.g., Thibault & Kelley, 1959) predict that an imbalance in rewards within the relationship between nurse and patient will result in frustration and anger for the nurse. If the nurse receives little feedback from patients and if the products of the nurse's labor are ambiguous then, frustration and dissatisfaction will occur. This relationship might be explored, not only with nurses, but also with other helpers such as counselors, psychologists, teachers, and psychiatrists.

Job satisfaction in nurses is complex and multifaceted. Information about the nature of their work, interpersonal relationships at work, and individual differences is necessary for understanding it. Interventions must be equally comprehensive in diagnosis and remediation.

APPENDIX A
DEMOGRAPHIC DATA SHEET

DIRECTIONS: Please provide all of the information by filling in the blank or blackening the number of the appropriate response.

Unit (primary job)

Unit (secondary job)

Hospital

Floor/Wing:

Employee ID #:

Shift:

(1) 7 AM - 3 PM

(2) 3 PM - 11 PM

(3) 11 PM - 7 AM

Age:

(1) S

(2) D

(3) W

(4) Sep

(5) M

(6) 58-65

Ethnic Group:

(1) W

(2) Bl

(3) Hisp

(4) Am Ind

(5) Orien

(6) Other

Years Since Training:

than 1

(1) less

(2) 1 - 2

(3) 3 - 5

(4) 6 - 10

(5) 11 - 15

(6) more

than

15

Years in Present Nursing Position: (1) less (2) 1 - 2 (3) 3 - 5 (4) 6 - 10 (5) 11 - 15 (6) more than 15

Total Years Working in Nursing: (1) less (2) 1 - 2 (3) 3 - 5 (4) 6 - 10 (5) 11 - 15 (6) more than 15

Number of Jobs You Have Held in Past 5 Years (any type): (1) 1 (2) 2 (3) 3 (4) 4 (5) 5 (6) _____

Hours worked/week: (1) 1 - 10 (2) 11 - 20 (3) 21 - 30 (4) 31 - 40
Which of the following best describes the way in which the nursing work is usually organized on your unit?
(Choose one only)

- (1) One nurse provides one service for all patients.
- (2) A team of nurses provides all services for a specified group of patients.
- (3) One nurse provides all services for one or more patients.
- (4) Other (please describe) _____

Please answer the following questions by using the blanks provided:

Do you have serious intentions to leave this hospital soon? yes _____ no _____

Not counting retirement, if you have your own way, will you be working for this hospital one year from now?

yes _____ no _____

Use reverse side for comments.

APPENDIX B
STRESS MEASURE

Please rank the following units according to the amount of stress which you believe to be a part of the work on those units and due to the nature of the work on those units. Rank the units by using 6 to indicate the unit with the greatest stress, 5 with the next greatest, etc. until 1 is used for the unit with the least amount of stress present. Please indicate with a check (✓) those units in which you work or with which you have direct contact.

UNIT	RANK BY STRESS LEVEL	(✓)
Obstetrics		
Medical-Pediatrics		
OR		
Surgical		
ICCU		
Rec Room		

APPENDIX C
AVERSIVENESS SCALE

Please indicate the average number of times per day that you perform each of the following tasks. Use the scale provided below by darkening in the number of your answer.

1 2 3 4 5 6 7
0/day 1-2/day 3-4/day 5-6/day 7-8/day 9-10/day over 10/day

1. Caring for incontinent patients.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
2. Maintaining bodily alignment of patients.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
3. Giving stoma care.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
4. Bathing and grooming a patient.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
5. Giving a therapeutic massage.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
6. Changing an infected dressing.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
7. Aspirating a tracheostomy.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
8. Alleviating pain.
(1).....(2).....(3).....(4).....(5).....(6).....(7)

9. Collecting a urine, feces, or sputum specimen.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
10. Giving decubitis care.
(1).....(2).....(3).....(4).....(5).....(6).....(7)
11. Maintaining skin integrity.
(1).....(2).....(3).....(4).....(5).....(6).....(7)

APPENDIX D
SUMMARY OF INSTRUMENTS

Instrument	Constructs Measured
Job Involvement Scale	job involvement
Rotter I-E Scale	locus of control
Janis-Field Feelings of Inadequacy Scale	social self-esteem
Life Satisfaction item	general life satisfaction
Aversiveness Scale	aversiveness of nursing tasks
Stress Scale	stress present in each nursing work unit
Job Diagnostic Survey	Core Job Dimensions skill variety task identity task significance autonomy feedback from the job itself
	Other Job Dimensions feedback from agents dealing with others
	Critical Psychological States experienced meaningfulness experienced responsibility knowledge of results

Instrument	Constructs Measured
	Work Outcomes job satisfaction internal motivation to work growth satisfaction satisfaction with pay satisfaction with security satisfaction with supervision satisfaction with social relationships Growth Need Strength (GNS)

APPENDIX E
SUMMARY OF METHODS

Hypothesis	Constructs Measured	Method of Analysis
1	job involvement self-esteem job satisfaction GNS	GNS x job involvement was computed. Self-esteem x job satisfaction was computed. Correlation between above products was calculated. Correlation was corrected for attenuation with the Spearman Correction for attenuation formula.
2	locus of control autonomy experienced responsibility	Ss were trichotomized on I-E scores; high scores are highly internal. Experienced responsibility was predicted from autonomy for each group and for all groups combined. Differences in the strength of the predictions in each group were compared for significance.
3	feedback from the job feedback from agents dealing with others knowledge of results	Knowledge of results was predicted from the other constructs by means of stepwise regression.

Hypothesis	Constructs Measured	Method of Analysis
4	motivating potential score job satisfaction satisfaction with pay satisfaction with security satisfaction with supervision satisfaction with social relationships	Job satisfaction was predicted from the other constructs by means of stepwise regression.
5	skill variety experienced meaningfulness stress aversiveness	Ss were trichotomized on stress scores. Experienced meaningfulness was predicted from skill variety for each group and for all groups as a whole. Differences in the strength of the predictions were compared for significance. Ss were trichotomized on aversiveness scores and the process was repeated.

Hypothesis	Constructs Measured	Method of Analysis
6	job satisfaction motivating potential score (MPS) skill variety task significance task identity autonomy feedback from the job aversiveness job involvement growth satisfaction satisfaction with pay satisfaction with security satisfaction with supervision satisfaction with social relationships	Job satisfaction was predicted from MPS. Job satisfaction was predicted from the core dimensions. Job satisfaction was predicted from MPS and all other constructs except the core dimensions. Job satisfaction was predicted from the core dimensions and all other constructs except MPS. The strength of the four predictions were compared.

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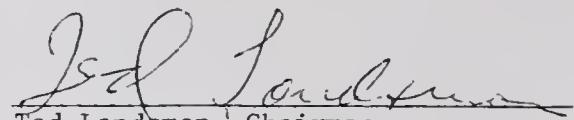
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BIOGRAPHICAL SKETCH

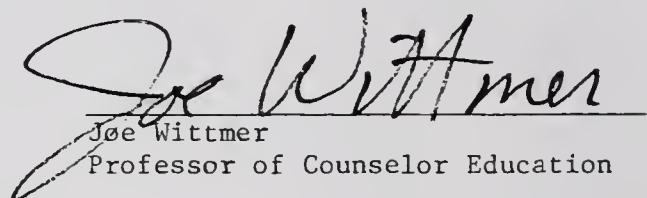
Edward Calhoun Taylor was born to Edward F. and Margaret D. Taylor in Macon, Georgia, on January 31, 1948. He received his high school diploma from Stratford Academy in Macon in 1965. He attended Emory University and graduated from Mercer University in 1969 with a Bachelor of Science in biology. His interest in job satisfaction in the helping professions arose from personal observations of helper "burnout" while he worked as a psychologist in two different prison settings.

I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



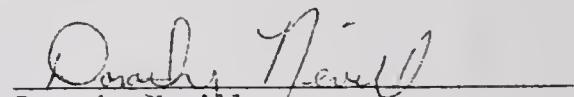
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I certify that I have read this study and that in my opinion it conforms to acceptable standards of scholarly presentation and is fully adequate, in scope and quality, as a dissertation for the degree of Doctor of Philosophy.



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This dissertation was submitted to the Graduate Faculty of the Department of Counselor Education in the College of Education and to the Graduate Council, and was accepted as partial fulfillment of the requirements for the degree of Doctor of Philosophy.

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Research